The Amateur Radio
COMMUNICATOR
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October 1991 Volume 1 Number 5

- *History of VE Testing*
- *Packet Radio Basics*
- *Finding Those Flea Market Bargains*
- *Where Will That Ham Ticket Take You?*
- *Code For Your No-Code Class?*

Get Your Family Licensed

Communicate with your family via ham radio.

by Don Stoner, W6TNS

I've tried for years to convince my wife that she should get a ham license. I used every trick in the book: "We need to communicate more;" "You could understand me better if you were a ham too;" "Look at all the people you would meet and new friends you could relate to." Nothing worked for 40 years!

Her standard response was, "I just can't learn the code, and besides, it's a silly way to talk." My rebuttal was half-hearted, I'm afraid. I had to admit that I didn't really enjoy Morse myself.

NO MORE EXCUSES!

Then, in February 1991, the FCC called her bluff. They created a new license class that did not require any code knowledge or proficiency. I explained that she didn't need to know a dit from a dah. All she had to do was pass a multiple choice written test. What could be easier? People are earning their ham license as never before—but not my bride! She still resisted my justifications.

IS THIS YOUR SITUATION TOO?

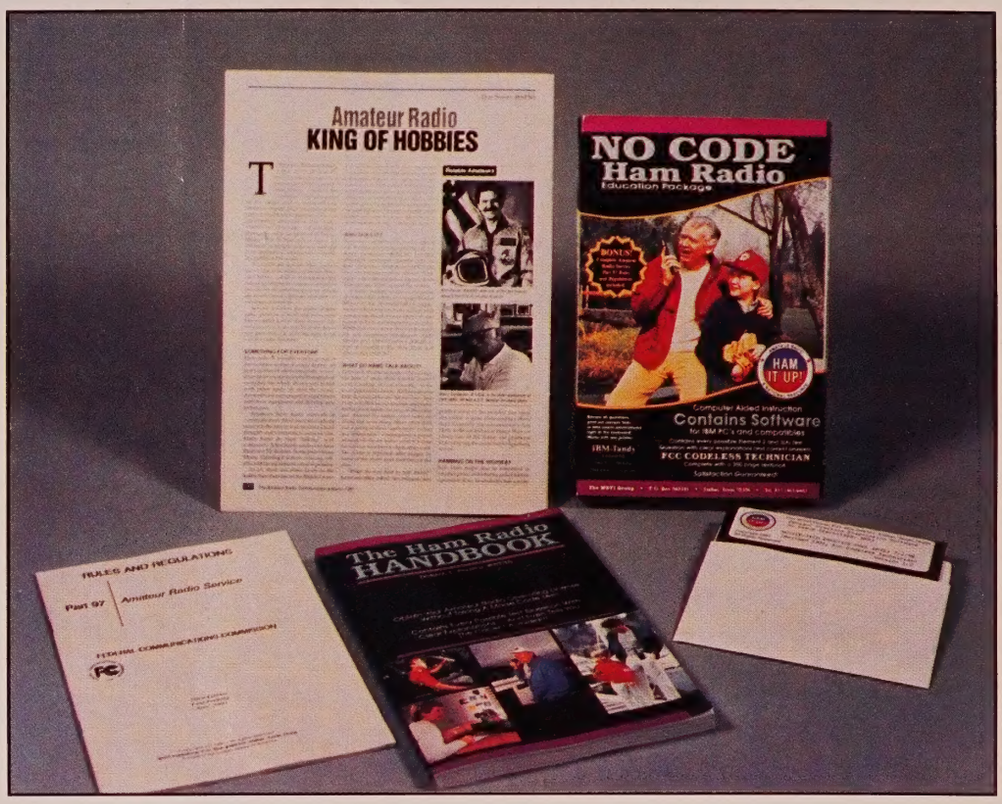
I suspect that many hams are in the same position. They would like their spouse to get a license but, like me, have approached the situation all wrong. When I started asking questions, I found that my wife didn't really like talking to strangers. And yet I was trying to convince her to get a license so she could communicate with people she didn't even know.

In the process of learning why she had resisted getting a ticket, I stumbled across her "hot button." With the breakdown of law and order in our society, she was concerned about safety for her and the children. And, with the general lack of reliability in automobiles, there was always a concern with an occasional emergency.

When I explained repeaters and how ham radio could be used to provide additional safety, I found a sympathetic ear. I showed her a borrowed hand-held that was so small it could get lost in the bottom of her purse! At last, after 40 years, she listened to my sales pitch and actually asked questions.

HOW ABOUT YOUR CHILDREN?

Teenagers know they are invincible and will live forever. Personal safety is not very high on their list of concerns. Selling the youngsters on getting an Amateur Radio license required a different tact and I found it. It's called "peer leverage."



One of my son's friends seemed curious about ham radio and asked the sort of questions that indicated a desire to get an Amateur license. I became his "elmer" and within a few weeks he took his ham test and passed. Guess who suddenly became interested in getting *his* license? Right! Within a month or so, with very little encouragement from me, my son went to the local VE group and earned his license too. Talk about peer pressure!

GET YOUR FAMILY LICENSED!

If you can convince the members of your family to get their Technician license, I've made passing the test a snap with a new publication called ***The Ham Radio Handbook.*** The book includes every question that might be asked on the written test and all the possible answers for each multiple choice question. My book also tells them which answer is correct along with some simplified theory to explain why.

THE DON STONER GUARANTEE

If your spouse and children can earn a ham license at all, they can do it after reading my book. I'm so sure, I'll make this guarantee. If one of your family member fails the license exam after reading ***The Ham Radio Handbook,*** just return everything and I'll refund the full purchase price—including postage (proof of purchase required). Anyone can pass the Technician ham test. I guarantee it!! Take advantage of my bonus education package. I'll send the book, plus 5.25" IBM compatible software for testing your family. It will tell them when they are ready to take the test. The program displays randomly selected questions, lets one pick the correct answer and grades performance. Or, if they prefer, they can print out tests just like those that the VE's use.

The package includes a complete list of Contact Volunteer Examiners. These CVE's will be happy to tell where and when the test is being given, no matter where you live. The package has a bonus booklet which contains all the FCC Rules and Regulations on ham radio. You also receive a free copy of *The Amateur Radio Communicator,* the journal of the National Amateur Radio Association.

All this is yours if you place a free call to The National Amateur Radio Association at 1-800-GOT-2-HAM. Have your VISA or MasterCard ready. Tell the operator you want the **NARA Amateur Radio Educational Package** for $29.95 ($3.00 S&H) to any U.S. address. Or, if you just want ***The Ham Radio Handbook,*** your cost is only $9.95 ($2.00 S&H). If you prefer to send a check, write to the National Amateur Radio Association, 16541 Redmond Way, Suite 232, Redmond, WA 98052.

Ham radio is guaranteed to influence your life and future positively.

DO IT TODAY!!

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ON THE COVER

Our cover this month is a photo of the SGC, Inc. Model SG-2000 Single Sideband High Frequency Transceiver. It is one of the first units that has been FCC Type Accepted for marine communications that is also designed to operate on the ham

(Continued on page 5)

The Amateur Radio Communicator

The Amateur Radio Communicator is published monthly and is the official journal of the National Amateur Radio Association (NARA), 16541 Redmond Way, Suite 232, Redmond, WA 98052.

The National Amateur Radio Association is incorporated in the State of Washington and is an exempt organization as defined in Section 501(c)(3) of the Internal Revenue Service Code.

Organization Goals

The National Amateur Radio Association is a nonprofit organization. It consists of individuals interested in the art of radio communication. The broad goal of NARA is to make Amateur Radio more widely known and to encourage more people to become involved in the Amateur Radio Service.

The organization has four specific goals within this broad framework. These are to a) publicize Amateur Radio to the general public, b) attract young people to the Amateur Radio Service, c) help existing Amateurs achieve the greatest benefit from the Amateur Radio Service and d) make Amateurs aware that our radio frequencies are in jeopardy from commercial interests.

NARA advertises in various consumer publications to create a public awareness of the Amateur Radio Service and to encourage readers to write NARA for more information. The Association also solicits authors who write on the subject of Amateur Radio in these publications. NARA has committed itself to making Amateur Radio more interesting and more accessible to all concerned.

NARA is specifically interested in encouraging young people to join our fraternity. The organization works with educators to increase awareness of the Amateur Radio Service and its value as an interesting way of educating young people. A core of young people insures continued growth of the Amateur Radio Service.

NARA believes that existing Amateurs should be more aware of the radio communication theory. Each month an article will appear in *The Amateur Radio Communicator* which discusses a technical aspect of the Amateur Radio Service.

NARA is very concerned that confiscation of frequencies assigned to the Amateur Radio Service will continue. These frequencies are a precious resource. On the other hand, there are an inadequate number of frequencies to accommodate all the new communication requirements. Amateurs must create an environment where it is more beneficial to the public to have Amateur Radio operators on these frequencies than new and emerging commercial services.

Membership and Subscriptions

Those joining NARA receive a subscription to *The Amateur Radio Communicator* for a period of one year. The combined cost of membership and magazine is $10.00 per year in all areas with a U.S. ZIP code. The cost is $16.00 per year in Canada and $20.00 per year elsewhere.

The NARA membership and subscription to *The Amateur Radio Communicator* cannot be separated. Since NARA is a nonprofit corporation, the membership cost may be tax deductible. Verify this with your accountant.

It is not necessary to hold an Amateur Radio license to become a member of the National Amateur Radio Association. The only "qualification" is an interest in radio communications.

Editorial Policy

Each article and column which appears in *The Amateur Radio Communicator* is evaluated by the Editorial Board to meet a single criteria: how it contributes to NARA's educational objectives. Editorial material is intended to either (1) interest new people in becoming a Radio Amateur, (2) help existing Radio Amateurs get more out of their hobby through better understanding, (3) explain the theory behind some aspect of the service or (4) educate Amateurs on how to retain our valuable spectrum.

How To Contact NARA

The editors of *The Amateur Radio Communicator* and officers of the National Amateur Radio Association want to hear from you. Please send your questions, comments or submissions to the National Amateur Radio Association, 16541 Redmond Way, Suite 232, Redmond, WA 98052 or call 1-800-GOT-2-HAM (1-800-468-2426) or 206-232-2579. Our MCI Mailbox is NARANET3 and on CompuServe it is 76702,753.

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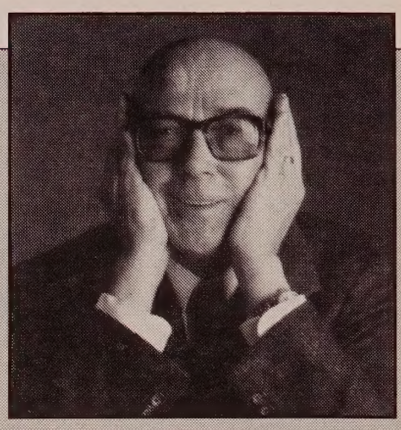
We Must Stop Cheating Our Children



Don Stoner, W6TNS

PART 3

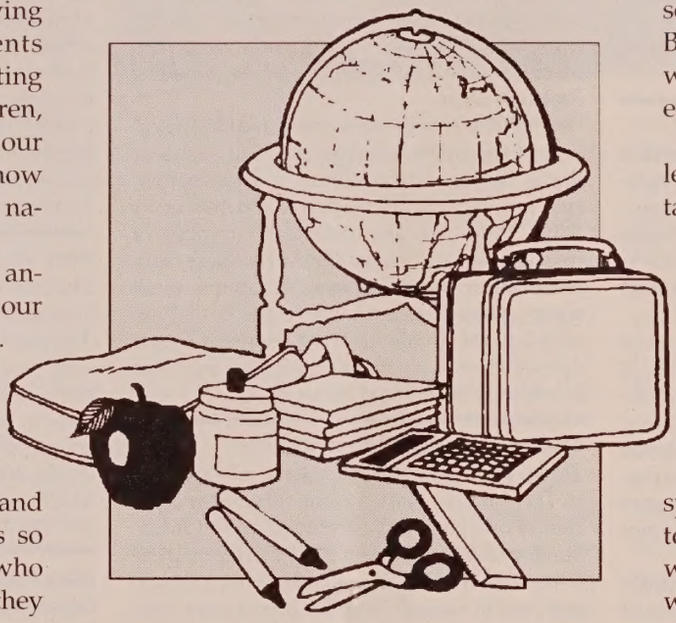
BY DON STONER, W6TNS

A reader who has been following my comments on the cheating of our children, has raised a logical question. "If our educational system is so bad, how come we are still such a great nation?"

It is a valid question. The answer, of course, is the quality of our institutions of higher learning. We have the best college and university system of any nation in the world.

There is a major reason that these institutions do so well, and our grade school system does so poorly. The majority of those who attend college are there because they want to be. They are there because they want a good education. In many cases, they competed with others to be selected for entry. Graduating from college means you have reached a certain level of mastery in your chosen field. As a result of the student's superior training, representatives from many major corporations aggressively recruit these brilliant young minds.

Contrast this to attending high school. Many students are there because the law says they must be there. For various reasons, high school students do not realize the importance of a good education. Some of those at the lower end of the socioeconomic scale do not see education as the means to escape from their poverty. Their parents either do not realize it or are not sufficiently concerned to convince their offspring about this absolute fact. Our teachers are well aware of the value of a good education. But against external factors, teachers and counselors seem impotent to make their students face reality.



COLLEGE SHOCK

Our youngest son received a culture shock when he entered college. Throughout school, the teachers contacted us when he didn't do well. If he missed a day, the attendance office called to report his absence. The school system was concerned about our son, as well they should have been. He was a "party animal." At college, he quickly discovered the real world. There was no roll call and we never heard from them on the subject of his grades. If he goofed-off, he failed, and he was out! There was someone right behind him, waiting for an empty chair. The information was available and well-presented for his eager mind to absorb. But he was just one of thousands who wanted the very best possible education.

I don't mean to imply that college professors don't care. They certainly do! There are so many people clamoring for information, that the personnel simply don't have the time or resources to hold the hand of each student.

In my opinion, the aspects that make our institutions of higher learning so great must be adopted in the grade-school system. If a high school diploma is to represent anything more than wanton waste of forest products, we must make graduation something of value. Students should be proud of the diploma they have earned. It should tell the world that they have mastered the subjects needed not only to survive but to excel.

AN ALTERNATIVE

I can already hear the oppositionists telling me that it cannot be done for one reason or another. I have a surprise for you folks! The citizens of Oregon believe that we can do much more than we are doing to educate our students before they graduate from high school. As a matter of fact, the Oregon State Legislature has established the goal of having the best-edu-

cated students in the country by the year 2000. I would like to tell you about their plan because, in my opinion, it will become a model for educational systems all over the country.

The Oregon Education Act for the 21st Century is the official name of the empowering legislation and is the creation of State Representative Vera Katz. It is clearly the most radical education-reform plan in the nation and is now Oregon State law.

Progressive educators believe it will redirect the stream of dropouts into skilled workers. The oppositionists, who offer no viable alternative, insist it will further deepen the class system in this country. What they forget, however, is that today *any* student can go to college if they want to study and make the necessary effort. Vera Katz understands that today, students need an education to acquire a decent-paying job. She is the former speaker of the Oregon House and a trustee for the National Center on Educations and the Economy. Key parts of the Oregon plan are based on research and recommendations of this group.

THE OREGON PLAN

The plan is initiated even before children start school. It also dramatically expands the Head-Start program for low-income families and their preschoolers. The primary grades are grouped together from kindergarten through second grade and team taught. The Oregon school year has been extended from 175 to 220 days. Teachers are to be retrained to handle this new educational concept.

After completing the second grade, students are evaluated to find their strengths and weaknesses. They are again tested in the fifth, eighth, and tenth grade. This gives teachers and parents an opportunity to overcome problem areas as they arise. Students who satisfactorily complete the school requirements through the tenth grade, receive a Certificate of Initial Mastery.

At this point the students can decide if they want to attend college or take a vocational track. Those who elect to go to college will undertake a rigorous program of college-preparation courses.

The Oregon plan calls for greater parent and community involvement in the educational process. Business, labor, and community leaders are expected to help draw up the educational curriculum. The program will be phased in between 1992 and 2010. The budget is $2 million to start the program, but the Oregon legislature has not allocated funds for the continuing implementation of the program. In my opinion, continual funding will not be a problem. People are quite willing to be taxed when they can see an obvious benefit. The Oregon State Legislature will become bolder in the allocation of funds when they see the interest and admiration that their initiative has generated.

After completing the second grade, students are evaluated to find their strengths and weaknesses.

Those who are familiar with the European educational system will recognize the similarities. In my opinion, this concept is an excellent compromise between the Japanese model and the inadequacies of the present American educational morass. The Japanese system subjects the student to a truly brutal competition. Unfortunately it also destroys any entrepreneurial spirit and personal initiative. America needs more of this, not less!

IT CAN'T BE DONE!

As you might imagine, the oppositionists have many negative comments about the Oregon plan. They quiver with righteous indignation when the word "tracking" passes their lips. I'm not sure I fully understand the implications of the word. Apparently these people resent the fact that students make their own career decision, instead of leaving it to chance.

There is nothing to be ashamed of nor are any apologies necessary from someone choosing a vocational track. I recently received a copy of the material available for vocational instructors called "School Shop/Tech Directions." The broad diversity of fields covered is truly awesome. Ads include computer-servicing courses, appliance repair, microelectronics, computer-aided manufacturing, robotics, lithography, and machine tools. This is just a review of the ads up to page ten! Anyone who puts down those taking a vocational track should examine the class materials—and their own thinking.

Today, when a student graduates from high school, they either go on to college (for which they had to be prepared) or get a job (for which they are totally unprepared). That sounds like tracking to me. The Oregon plan simply moves the decision process up a few years and handles it in a more structured manner.

Others opposing the plan think it will widen the gap between the classes, permitting only the elite to get an education. They believe the tracks will lead children of color and low-income students away from college. What they are saying, whether they realize it or not, is that kids in their ethnic group cannot handle the competition. They need special consideration to make the grade and compete with others.

Commit this to memory—*any* child today, even one attending an inner-city ghetto school, can get a good education *if they want it*. Anyone who wants to go to college and is willing to make the effort and study can do so.

WHERE DOES HAM RADIO FIT?

For those of you who do not understand what this has to do with our fraternity, let me expand the limits of your mind. We have been so busy protecting our hobby from interlopers, and extolling the virtues of Sam Morse's creation, that we have overlooked an obvious fact. Amateur Radio is an ideal amalgam with which to create a spark of wonder, curiosity and amazement in a child's eyes. We Amateurs take communications for granted. We make it mundane. To a youngster,

(Continued on page 4)

CHEATING OUR CHILDREN

(Continued from page 3)

the things we do are fascinating and desirable. We must exploit the awe with which they view Amateur Radio.

Equally important, ham radio can be used as a foot-in-the-door activity to introduce young people to those things that they must learn in school to be a productive citizen. Let's discuss some specifics. Most schools require and teach foreign languages. What better way can you imagine to learn the subtleties of a language, or learn the correct accents and pronunciations, than to listen to shortwave broadcasts? A core of Amateurs in a school can provide assistance to foreign language instructors by taping various broadcasts.

How about Geography? What is the first thing you do after you talk to someone on Prince Edward Island, Canada? You get out the map and try to locate it. How many kids today know where Argentina, New Zealand and Greenland are located?

What about Social Studies? When you talk to a VK station (Australia), you might learn that they were originally populated by prison inmates, that their governmental system is very much like ours and they also have a minority race called the Aborigines.

Amateur Radio involves mathematics and reduces it from abstract words to actual needs. How do you calculate the length of a dipole or the resonant frequency of a tuned circuit? Geometry becomes more than simply calculating the hypotenuse of a triangle when the apogee and perigee of an OSCAR satellite is determined and plotted.

How many kids today know where Argentina, New Zealand and Greenland are located?

There are many more examples of how ham radio can be used to introduce students to the various disciplines they must learn in school.

LET'S GET ORGANIZED!

NARA would like to see a Science and Technology Club in every junior and senior high school in the country. We are naming the effort "Project SAT-Club." Various scientific interests would be involved, such as Astronomy, Chemistry, Physics and so on. Computers and Amateur Radio would be the focal point of the group. Each club would have its own radio station for communication between Amateurs, club members, and other school clubs. Both voice and digital modes would be featured.

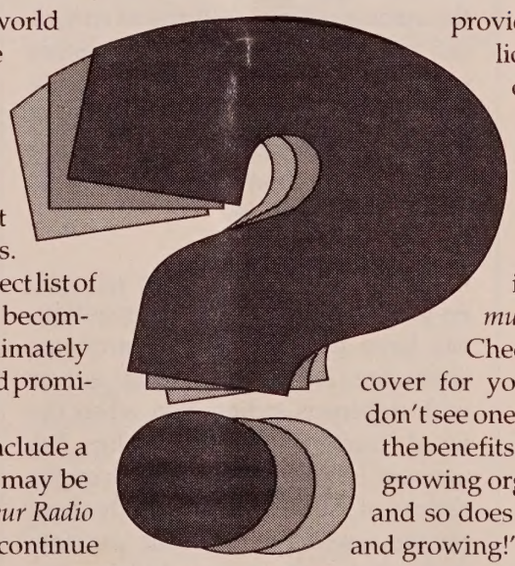
We propose to create models of these SATs-Clubs, then test the models before going national with the concept. The State of Oregon provides an ideal workshop in which to carry out such a concept.

The major problem with an undertaking of this sort is the organizational aspects. What is a Science and Technology Club? How can SAT-Clubs be used to improve the education of students? How does the NARA get the school administration to accept such a concept, or convince the Board of Education that incorporating an SAT-Club will not significantly impact their budget? Who will be the organizer and on-

HOW DID I GET THIS MAGAZINE?

One of the ways we can tell the world about the goals and ambitions of the National Amateur Radio Association is to supply complimentary copies to non-Amateurs. We send copies of each issue to hobby shops and science centers, and about 6,000 pieces to newly licensed hams. This magazine is also mailed to a select list of people who might be interested in becoming Amateurs. We also send approximately 10,000 copies to NARA members and prominent people in Amateur Radio.

If your mailing label does not include a NARA membership number, this may be your last or only copy of *The Amateur Radio Communicator*. We would like to continue providing you with this informative publication each month, but we can only do so if you are a member. For those interested in becoming a ham, or who are newly licensed, a membership in NARA represents an outstanding bargain. A membership, which includes 12 issues of *The Amateur Radio Communicator*, is only $10.00 per year.



Check the mailing label on the back cover for your membership number. If you don't see one, look up about six inches and read the benefits of becoming a member of this fast-growing organization. We need your support and so does ham radio. Help us get it "going and growing!"

IN MY OPINION

going leader of the club? If they do not have a ham license, how can they be convinced to earn one to operate the club station?

Each question leads to two or three more. Fortunately for Amateur Radio, there are a number of hams who are also excellent educators. Hopefully they are within the sound of my word processor or can be made aware of the NARA's efforts. Instructors, who are in the classrooms every day, can ferret out the questions that must be answered to insure the success of such a program. More importantly, these bright minds of education also can provide the answers.

So the end of this editorial series is a call for help and guidance. The NARA is requesting papers, proposals, ideas, and suggestions from the Amateur fraternity. The question we ask is relatively simple. How can the NARA create and carry out a plan to install Science and Technology (SAT) Clubs in our nation's schools?

Those responding need not be concerned about how the Amateur stations in the SAT-Clubs are to be equipped. That has been resolved and is the least of our concerns. We must concentrate on structure, the politics of acceptance, and the means for seeing measurable results.

Those who make a significant contribution at the conceptual stage will be involved and compensated during implementation of the plan. Even if you cannot contribute to the overall concept, individual suggestions and ideas are like nuggets of gold.

We look forward to hearing from you on this most crucial topic.

73, DE Don, W6TNS ❑

COVER PHOTO

(Continued from page 1)

bands. The photo emphasizes the fact that the radio works well in extreme operating conditions.

More and more mariners realize that ham radio gives them an additional safety "lifeline." They are taking their ham tests in ever greater numbers.

Thanks to SGC, Inc., P.O. Box 3526, Bellevue, Washington 98009, for permission to use their photo. ❑

LETTERS

MORE KUDOS

Congratulations on your publication, *The Amateur Radio Communicator*. I wish you every success. My check for NARA membership is enclosed.

I agree that "We must get ham radio 'going and growing'" if we are to keep our frequencies. Loss of frequencies has plagued ham radio since the very beginning. In fact, after World War I, we almost lost all of our frequencies. Read one of the earlier editions of the *ARRL Radio Amateur Handbook*. They vividly describe that era and Hiram Percy Maxim's heroic efforts to save Amateur Radio.

I would like to invite your readers to visit our Ham Swap Meet, the first Sunday of each month at Las Positas College in Livermore, California. Take Route 580 to the Airway Boulevard Exit.

Once again, congratulations and my very best wishes.

Sincerely,
Alexander A. Mavronicles, AB6DQ
Member 10242

I support the idea of your magazine 100 percent! Enclosed is my check for $25.00 for a three-year subscription. Keep up the good job.

Please write more articles about grammar-school children in ham radio. It is very difficult to find articles for my fourth through sixth graders to read that aren't over their heads. *[See Fred Maia's column this month—Ed.]*

73,
John Abbott, K6YB

I just finished reading Volume 1, Number 2 from cover to cover and thoroughly enjoyed it. Therefore, enclosed is my check for a three-year subscription.

I recently taught a Novice class and plan on teaching an Amateur Radio class to a middle school Science Club where my son teaches a science class.

Good luck on your very informative magazine.

73 and warm regards,
Jerry Gavin, NU3D

■ *Thanks for the kind words, guys. And good luck, Jerry. The NARA would like to see a Science and Technology Club in every school in the nation! See this month's editorial.*

THE MINORITY VIEW?

The "Cellular Fone Fighter" ad is very deceptive for a number of reasons. Please *do not* give people the impression that they can rely upon Amateur VHF/UHF FM in an emergency. It is much better and safer to use a five-watt CB transceiver tuned to Channel 9 or a cellular phone.

Sincerely,
Jim, AB4YP

■ *There are a number of people who would disagree, Jim, including your humble editor. I have driven all over the United States and I have yet to travel anywhere that I could not contact an Amateur via a repeater on two meters.*

THE MAJORITY SAYS

Your inside-cover ad in the April/May 1991 issue of the *Communicator* really caught my attention. I've been a ham for over 30 years and a cellular phone dealer for almost three!

While your proposed idea may be anathema to cellular dealers, it makes sense. I just need to sort out how to participate. I'd like to begin by ordering some of your publications and reprints for articles like "King of Hobbies." Meanwhile, please accept my check for membership into the NARA.

Sincerely,
Burt A. VanderClute, II, N4ERM

■ *The purpose of the ad was not to take pot-shots at the cellular industry, Burt. Instead, it was to get people's attention, and tell them about ham radio in an interesting way. From this standpoint, the ad campaign was successful far beyond our expectations.*

PUBLIC SERVICE

Most of the emphasis on Amateur Radio seems to be placed on the hobby aspects. FCC Part 97 is very specific as to the basis and purpose of the Ama-

(continued on page 6)

LETTERS

teur Service. Appreciation of this charter and the rules of conduct as published by the ARRL would go a long way toward curing the problems of Amateur Radio.

I am in charge of emergency radio communications (RACES) in the Sun City California District. A few dedicated Amateurs have, at their own expense, established an impressive communications system in our community. Facilities are located in the local hospitals, fire stations, law enforcement agencies, and the Red Cross center. If any Amateurs in the area would like to join our organization, please contact me.

73,

I.L. McNally, K6WX
26119 Fairlane Drive
Sun City, CA 92586

■ *I agree with your premise 100 percent. I don't believe the word "hobby" can be found anywhere in Part 97. The NARA will continue to emphasize the hobby aspects of the Amateur Radio Service, since the public seems to relate to leisure-time activity. However, once a person earns a ham license, it is up to all of us to stress the service aspects of ham radio. See the "Hamwatch" article in this issue for another way Amateurs can make a contribution to their community.*

TESTING 1-2-3-4

I am enclosing a copy of the "master schedule" for VE testing in Arkansas. If any of your readers are ready to take their ham test in my area, have them contact me. Please find my enclosed check for a one-year subscription too!

73 and keep up the good work.

Bob Ideker, WB5VUH
ARRL Section Manager
210 Alanbrook Avenue
Sherwood, AR 72116

IT'S NOT INTERFERENCE!

I take issue with the information on page three of the April/May issue of *The Communicator*. You use the word "interference" as it relates to home entertainment equipment. Call it as it is, "interception" or "non-immunity." Interference carries the meaning "with deliberateness." Interception, in this context, means picking up RF that this equipment should not receive!

Minimal leakage and radiation tests and verification are required by the FCC on computers and any home entertainment equipment with an oscillator. However, the FCC does not ask for RF susceptibility/immunity testing of this equipment. Why not?

73,

Al Markwardt, W5PXH
ARRL TA, EMC Engineer

■ *There's a one word answer, Al. It's called budget. The FCC doesn't like these problems any more than you do. However, as more of this unfiltered equipment is sold to an unsuspecting public, and interference complaints increase, we may see some changes. It will be cheaper for the Commission to insist this equipment be tested for RFI than to cope with the public outcry.*

SEXIST—WHO ME?

I recently received your *Amateur Radio—King of Hobbies*, by Don Stoner. After reading the first page or so, I scanned titles. I saw the "What's an XYL?" heading and picture and figured it was a good clip to show my wife. I have been working for two years now convincing that hams were not just a bunch of middle-aged men trying to look macho with 5 HT's hanging on their sagging pants belt. Well, what ever good I had done those two years was dashed when she read the "What's an XYL?" clip. Your reference to "the skirt and sweater brigade" is incredible! How sexist and degrading can you get? Up to that point the clip was marginally encouraging to females but that last line really blows it out of the sky. I know a number of female hams and recognize them as doing some great things for the hobby (just as us macho males), as well as participating in every aspect of Amateur Radio.

73's,

Adam Strack, N9BKM

■ *Adam, I find your comment fascinating! To date, we have shipped out almost 35,000 copies of* Amateur Radio—King of Hobbies. *My breezy reference to the fairer sex will also be found on page six of my* Ham Radio Handbook *(15,000 copies in print). Thus, out of 50,000 exposures, you—a male—are the first to point out my transgression. I'm afraid some of my generation simply doesn't understand all this politically correct language. And I can't help but believe that if my comments destroyed your efforts, then your wife's interest in Amateur Radio was pretty marginal. I do agree totally with your basic premise, Adam. We must do everything possible to get more ladies interested in the Amateur Radio Service, along with our young people, minorities, and the handicapped.*

ECOLOGY

I am an educator in Carlisle, Pennsylvania and also a licensed ham. I teach a seventh-grade course in global studies. I am interested in making contact with other hams, who are educators, in the United States and abroad. I would like to put together a network of classrooms for the purpose of studying global issue.

Any contacts you could provide me with would be greatly appreciated.

Sincerely,

John Barnes
317 N. Mountain Road
Newville, PA 17241

■ *John, anyone interested in global issues and ecology should contact and join TERC, 2067 Massachusetts Avenue, Cambridge, Massachusetts 02140. This is a highly professional organization with National Science Foundation funding.*

The Editor would like to hear from you! Send your questions or comments for the Editor to:

National Amateur Radio Association
16541 Redmond Way
Suite 232
Redmond, WA 98052
MCI Mail (NARANET3)
CompuServe (76702,753)

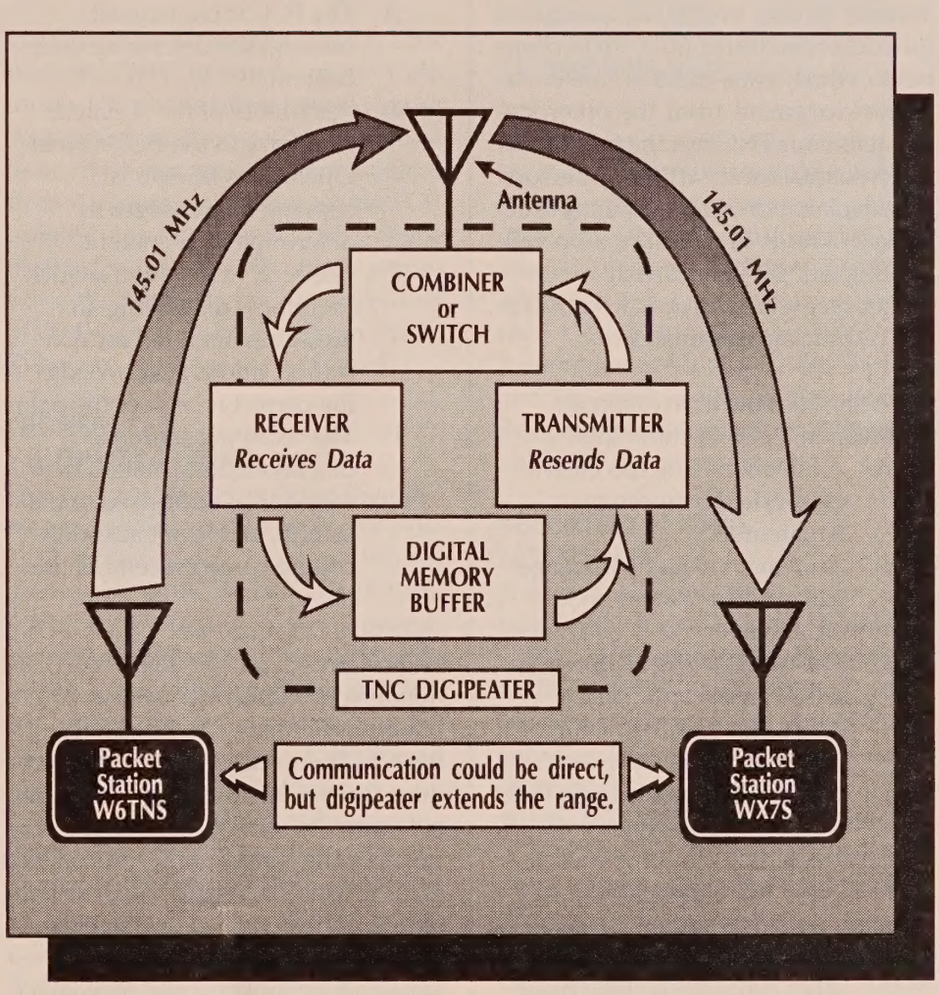
Packet Radio Operation

BY TERRY R. DETTMANN, WX7S

OK, let's be honest with each other. Does packet radio interest you or not? Although I have met a few Amateurs who dislike packet radio, those people must be the minority these days. When I attend conventions or Hamfests, any booth offering the latest and greatest in packet is always very popular. Sometimes it is so crowded that you cannot get near the booth! As a new operator, you can participate in the packet revolution. As a Technician, you can take full advantage of the many technological advances in the VHF area. So what *is* packet radio?

Very simply, packet radio is the new communication mode that allows you to connect your computer to another Amateur's computer through your radio. This mode of communication has captured the interest of Amateurs world-wide. Canada even created a Digital License class just for people who would like to work with packet radio. While you can *do* packet on HF, and many Amateurs do, most of the packet activity is in the VHF arena.

Packet radio is interesting to people for different reasons. Until recently, you could easily build your own equipment for this communication mode. Commercial equipment available now is cheaper and better than most people could build. But the people who are advancing the state of the art are still building new products. You also can create computer software to work in the packet area. Since packet radio is a blend of computer and radio technology, it has captured the interest of an increasingly computer-literate Amateur Radio community.



Besides everything else, it's fun! You can have many people sharing a single communications channel *without* interference. Try that with Voice and all you will get is confusion. As a new Amateur authorized to use packet radio, you need to understand the basics of packet so that you can work it intelligently.

Essentially, packet radio translates some advances of computer networking into the radio world. For years, we have been connecting computers in networks with a high level of success. The pioneers of packet radio did the same.

In its simplest form, a packet-radio station consists of a computer, a TNC (Terminal Node Controller), and a radio. A TNC is like a modem only it doesn't require a telephone line. My own portable station fits in a small briefcase and works with my two-meter hand-held and my Radio Shack Model-100 computer.

(Continued on page 8)

The radio is constantly receiving packets that are transmitted by other stations on the packet channel. These packets of data are passed to the TNC which decodes them. Each packet has an *address* that tells what station the particular packet was meant for. If the packet was meant for you, then it is accepted and passed on to your computer. You also can monitor all packets that are coming in if you want to.

When you are sending messages to another station, your TNC assembles the packet and transmits it on the channel to which your radio is tuned. An acknowledgment from the other station tells your TNC that the packet was received intact and without any errors. This explanation is all very simplistic. Packet radio is much more involved, but this will get you started.

Let's see what you need to know for the Technician examination:

1 What does the term *connected* mean in a packet-radio link?

A A telephone link has been established between two Amateurs.

B An Amateur Radio message has reached the station for local delivery.

C The transmitting station is sending data specifically addressed to the receiving station, and the receiving station is acknowledging that the data has been received correctly.

D The transmitting station and a receiving station are using a certain digipeater, so no other contacts can take place until they are finished.

The answer is "C." A packet-radio system works with packets of information that is sent out by your station. These are broadcast just like any other radio signal. If the station you are addressing is listening, it will answer your packets (acknowledge them) which tells your TNC that you are *connected*.

2 What does the term *monitoring* mean on a frequency used for packet radio?

A The FCC is copying all messages to determine their content.

B A member of the Amateur Auxiliary to the FCC's Field Operations Bureau is copying all messages to determine their content.

C The receiving station's video monitor is displaying all messages intended for that station, and is acknowledging correct receipt of the data.

D The receiving station is displaying information that may not be addressed to that station, and is not acknowledging correct receipt of the data.

The answer is "D." The TNC (Terminal Node Controller) allows you to put the system in a *monitor* mode, during which you can sit and read everything that is passing on the packet-radio network. This can be a fascinating way to meet the people who are on the system without having to participate directly. If you are new to the hobby, it can be easier to watch for awhile. Then you can learn how people are contacting each other and who is usually there.

3 What is a *digipeater*?

A A packet-radio station used to retransmit data that is specifically addressed to be retransmitted by that station.

B An Amateur Radio repeater designed to retransmit all audio signals in a digital form.

C An Amateur Radio repeater designed to use only digital electronics components.

D A packet-radio station that retransmits any signals it receives.

The answer is "A." Any packet-radio station can retransmit packets without ever saving them for the local operator to see. Many areas have a club or someone who sets up a digital repeater or digipeater. This is done as a public service. The digipeater retransmits messages over a broad area. This allows many more people to receive the packets.

4 What is the meaning of the term *network* in packet radio?

A A system of telephone lines interconnecting packet-radio stations to transfer data.

B A method of interconnecting packet-radio stations so that data can be transferred over long distances.

C The interlaced wiring on a terminal-node-controller board.

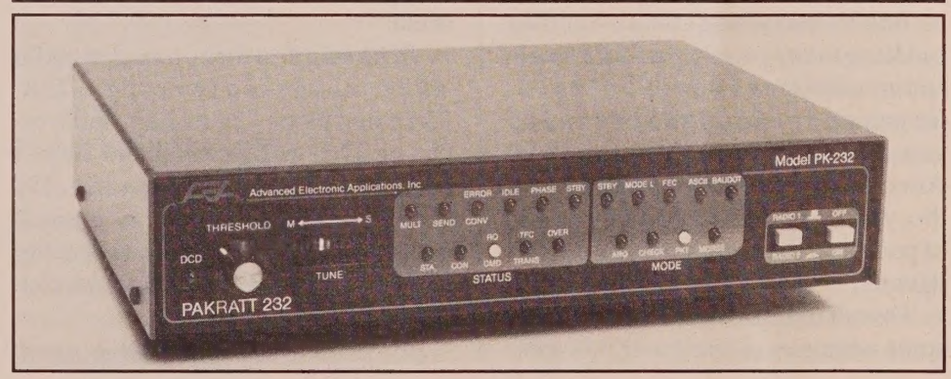
D The terminal-node-controller function that automatically rejects another caller when the station is connected.

The answer is "B." Packet radio allows us to pass messages from one location to another through other packet-radio stations. I can send a message via a series of packet-radio stations directly or through a network with software that allows the messages to be routed automatically.

If there is any subject you would specifically like to see explained in these pages, drop me a note in care of the NARA.

For now, 73, Terry, WX7S ❑

The PAKRATT 232, from AEA, sends and receives all digital modes, even CW.



A Short History of Amateur Radio Regulation

PART 3 THE HISTORY OF THE VEC SYSTEM

Fred Maia, W5YI

BY FRED MAIA, W5YI

Testing for Amateur Radio licenses has changed dramatically over the past decade! To become a ham in the early 1980s, one began at the Novice level. One Volunteer Examiner would administer the five words-per-minute code test and write the FCC in Gettysburg, Pennsylvania, for a copy of the 20-question written examination. The multiple choice test had to be returned to the FCC within 30 days for grading. If the tests were passed, the applicant was rewarded a few weeks later with a call sign which contained an "N" after the initial letter. The "N" was simply removed when the Novice upgraded to a higher class.

Even the Technician and Conditional Class license test could be taken by mail. The Conditional Class existed for applicants who lived more than 175 airline miles from a semi-annual FCC examination point. The Conditional Class, later abolished, conveyed the privileges of a General Class license. The whole process presented an enormous paperwork burden for the FCC. And there was concern that perhaps the supposedly secret questions in all FCC examinations were not secure.

Although the exact questions appearing in the FCC examinations were not widely known, license preparation publishers distributed study material which was professed to be the exact topics and questions asked in the FCC's ham exams. The most accurate was *The Final Exam* series published by Dick Bash, KL7IHP, of San Leandro, California. He made a career of seeking out and publishing the exact ham test questions. Bash got much of his material from Amateurs, who after taking FCC tests, returned the "feedback" cards he inserted in his book. The study manuals of other publishers, including those of AMECO and the American Radio Relay League were not as factual.

THE NEED FOR VOLUNTEER TESTING

Due to constantly dwindling financial resources and reduced personnel, the FCC started taking steps in 1980 toward turning the Amateur Radio operator license testing program over to the Amateur community. With serious FCC budgetary problems and personnel cutbacks, Amateur Radio testing was beginning to look like an expensive exercise in futility.

Legislation covering volunteer examinations actually had its start in the Spring of 1981, when William Dannemeyer (R-California) proposed a Communications Act amendment that would allow volunteers to legally administer the Novice examination. Although Novice exams had been administered by volunteers for decades, Dannemeyer said, "Government rules forbid volunteer help by a private citizen." Dannemeyer added that "This practice saves the FCC money and is more convenient for the Amateur community by eliminating the need to travel to an FCC field office, which is often a good distance away." He felt that the law should provide for volunteer Amateur Radio operator testing.

Ex-Senator Barry Goldwater, K7UGA, agreed. He proposed a tax-saving measure that would allow all Amateur Radio operator examinations to be prepared, administered, and graded by licensed hams. Congress approved volunteer testing as part of the Communications Technical Amendments Act of 1982. On September 14, 1982, ex-President Ronald Reagan signed Public Law 97-259 into law.

VOLUNTEER TESTING TAKES SHAPE

A month later, the ARRL proposed a plan for the use of Amateur Volunteer Examiners. According to the petition, individuals and organizations would propose questions for all examinations based on the FCC "Amateur Radio Operator License Examination" study guide. The FCC would then issue lists of approved questions which it would draw on for exams. The League envisioned nationwide testing coordinators who would handle the testing for the government with the FCC still issuing the ham operator licenses. A key demand by the ARRL, as a prerequisite for their becoming involved in Amateur testing, was a provision for expense reimbursement.

It was concluded by everyone at the time that the League would become the sole ham testing administrator, especially since they had already begun recruiting Volunteer Examiners. I can remember being approached by many local Amateurs asking me to sign their ARRL "good guy" sheet attesting to their character so that they could become a League examiner.

In the year following the League's proposal, however, there was very little progress towards volunteer Amateur Radio testing. Then it happened. On September 22, 1983, the FCC issued a Report and Order that stunned everyone! The Commissioners elected to go with a system of three-person teams of examiners reporting to regional Volunteer Examiner Coordinators rather than nationwide VEC's. However, there was no provision for expense reimbursement. The FCC's decision to go with Regional VEC's was made because it was apparent that the League would not apply to be a VEC unless they could recoup expenses.

The FCC also announced that 1984 would be the last year that they would be conducting any Amateur license examinations—and even then, they would only be conducted quarterly. Until 1984, most FCC Field Offices had been administering monthly and even weekly testing.

In October 1983, the Commission circulated a Public Notice stating that they were seeking groups to undertake volunteer examination coordination for each Amateur Radio call sign district—plus Alaska (Region 11), the Caribbean (Region 12) and the South Pacific (Region 13). Several Amateur groups applied to become Regional VEC's.

Many of these early VEC groups are no longer coordinating examinations. There are currently eighteen different VEC organizations, but only two of them—the ARRL and W5YI are large testing organizations. Together they account for over 80 percent of all ham license exam sessions conducted in the Amateur Radio Service.

The W5YI group applied to become a VEC during mid-1984, the last year that the FCC said they would be conducting examinations. It appeared to us that Amateur testing would indeed become very scarce, or even non-existent in some areas. Our group felt that we could duplicate the successful Novice testing program in the other license classes as well. The W5YI-VEC was the first to request to become a coordinator in all Regions.

Later on, ex-Senator Barry Goldwater tagged expense reimbursement legislation to an existing bill. Once that was approved, the ARRL also agreed to coordinate testing in all regions. As a prerequisite to becoming a nationwide VEC, the League was required to release their multiple-choice questions to the public and place them in the public domain so as not to gain a publishing advantage.

THE QUESTION POOL SYSTEM

The Novice written examination system was completely overhauled in 1983. While the code test remained the same, a new system was developed by the FCC for the written test examinations. It was similar to what the League had proposed in their October 1982 petition.

With assistance from the Amateur community, the Commission developed a pool of 200 questions—some of which would be randomly selected by VE's from blocks of questions and asked of Novice-level applicants. Many of these questions were proposed by the Dayton Amateur Radio Association and the League. These questions were released in stages to the public in the form of bulletins. PR (for Private Radio) Bulletin 1035A was the first one distributed, and it covered the Novice Element 2 questions.

For the first time examinees knew the exact questions that they might be asked. What they did not know were the answers. Even though the Commission had them, they did not release them to the public! The FCC had received the suggested multiple choices, correct answers, and reference material from the Amateurs who suggested the questions.

The FCC left it up to the Volunteer Examiners to come up with the answer format. The answer format could be in any form; multiple choice, oral interview, single answer, even true/false. The ARRL ultimately supplied the multiple-choice answers to the Novice questions and they became the standard.

Question pools were later developed for the remainder of the Amateur classes, and by 1984, all were in place. PR Bulletin 1035B notified the public of the General Class questions required for the Technician and General Class. (This was before Element 3 was split into Element 3A and 3B). The VHF questions from this pool were particularly applicable to the Technician. They were later assigned to Element 3A; the HF Novice-oriented questions to Element 3B. FCC document PR 1035C revealed the Element 4A questions and PR 1035D provided the Extra Class Element 4B questions.

The bulletins also told Volunteer Examiners how many questions to ask on each topic. By early 1984, all was ready for the Volunteer Examiner corps to begin testing. At first, neither VE's nor VEC's selected the questions. The questions were dictated by the Commission. The FCC issued each VEC a list of "Examination Designs." VEC's could select from three test versions for each license class; Schedule A, Schedule B or Schedule C. Each schedule referred to specific question numbers.

The Commission had elected to release only the questions and not the multiple choices along with the correct answer. This meant VEC's had to develop answer formats for hundreds of questions that appeared in the FCC's mandated questions.

The W5YI-VEC received much help from fellow Amateurs and ham organizations in the beginning. It was very difficult for VEC's to coordinate testing when we didn't have adequate examination materials and in some cases, the needed VE's. Even though the ARRL had the multiple-choice answers and Volunteer Examiners to assist the process, they refused to release them, citing privacy constraints.

The Dayton Amateur Radio Association was one of the first to conduct VEC System testing in the 48 contiguous states. (I believe that the Anchorage Amateur Radio Club VEC was the first.) DARA had submitted many of the questions that the FCC used in the initial question pools. Their VEC manager, Judy Frye, KG8P, shared her multiple choice answers with several other VEC's.

While not widely known, the first ARRL examinations were administered under the W5YI banner. We received a phone call from ARRL Northwestern Division Director Mary

E. Lewis, W7QGP, early in our testing program. She was concerned that League members in the Pacific Northwest were unable to find testing opportunities since the League had not yet agreed to become a VEC. Mary asked us to help and we agreed. The problem was that we did not yet have all the questions completed that were needed for testing all classes.

THE START

Mary's husband, Harry Lewis, W7JWJ, an Extra Class Amateur—solved this matter by helping us complete the multiple choices needed to begin testing. Harry (and our first VE team) travelled all over the northwest in 1984 conducting W5YI-VEC examinations. This involved 10 seminars for prospective VE's in 10 cities, 4 states, and all in just 10 days! They traveled over 2,500 miles from Seattle to Wyoming. As Mary says, "What a way to spend a vacation!"

Those completed question sets were sent to the Shreveport Hamfest in September 1984 so they too could have a testing program. Up until that time, the FCC had sent field personnel to conduct tests in Shreveport. The pass rates were very poor since no one knew the questions.

Slowly, ham operator testing became more widely accessible to the Amateur community. The big problem was that every VEC had different answers and multiple choices to the same questions! Standardized answers had yet to become available. We solved that by filing a Freedom of Information Act request with the FCC for their copies of all questions, multiple choices, and answers. Some information held by federal agencies is protected from disclosure, but not Amateur Radio operator test questions.

The W5YI-VEC sent photocopies of each question to every license preparation publisher we could think of. The League refused our offer, but other publishers—including the Gordon West Radio School and AMECO accepted them. It was our first attempt at standardizing the answers. Now all license preparation material would have the same answer! 1984's pass rate of 47 percent increased to 58 percent the following year.

In 1986, all VEC's agreed to use the same multiple-choice answer formats. At least one California VEC had been using true/false answers to the questions. Although this was perfectly legal, it caused a problem. Some test applicants were now beginning to "shop" for easier Amateur Radio operator tests. The standardized questions and answers effectively put a stop to this practice.

Once a year a meeting is held for all VEC's. All questions are periodically revised by an internal committee elected at this conference called the Question Pool Committee. The W5YI-VEC is one of those three committee members.

Incidentally, the Question Pool Committee will be revising the pool sometime in the near future. They are actively seeking new questions, "distractors," and answers to incorporate into the new material. If you have any questions you would like to see used, send them to NARA to be edited and forwarded to the committee. Creation of these questions can make an excellent club activity.

So there you have it, a history of the Volunteer Examiner Coordinator System and how it evolved about. Basically, the duties of a VEC are to: (1) recruit and accredit Volunteer Examiners; (2) keep Volunteer Examiners aware of additions and amendments to the testing program; (3) provide for or approve Amateur testing materials; (4) collect successful candidates' application forms, answer sheets, and test results; (5) prepare and maintain records of testing sessions; (6) and screen, resolve defects, and forward successful license applications to the FCC for license issuance.

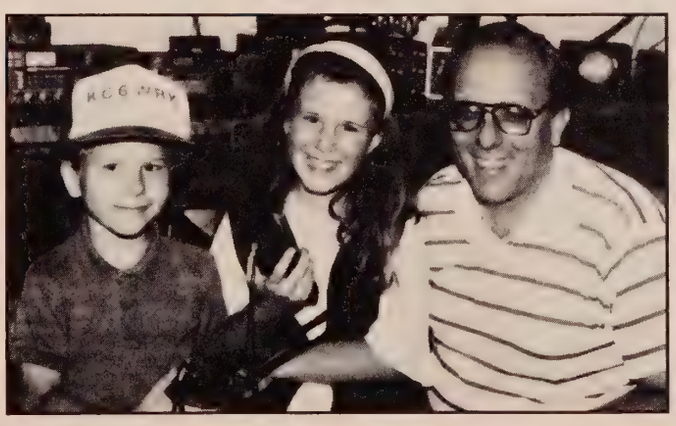
An increasing number of the W5YI-VEC examinations are being administered using computer software that generates properly completed tests. Every test is completely different, which increases the integrity of the testing process. If you would like more information on testing software, or other aids for the VE, contact the W5YI Group at the address shown below.

Would you like to make a contribution to your fraternity? Let us know if you are an Advanced or Extra Class level Amateur and wish to participate in our testing program. You may request a VE application by writing: W5YI-VEC, P.O. Box 565101, Dallas, Texas 75356.

NEWS FROM THE WORLD OF AMATEUR RADIO

Two of the youngest hams in the country received their initial Amateur Radio Technician Class licenses last July. They are seven-year-old R. Scott Earl, KC6WRK, and nine-year-old Jeanine Earl, KC6WRI. Scott and Jeanine are currently attending second and fourth grade in San Diego and both are active in baseball and soccer. Scott is especially interested in conversing with an astronaut someday. Their older ham friends have expressed amazement at their ability to pass the required FCC examinations. Both youngsters studied for several months with the help of their father, Ron Earl, W6TXK. Their dad has been teaching Amateur Radio classes for about 10 years.

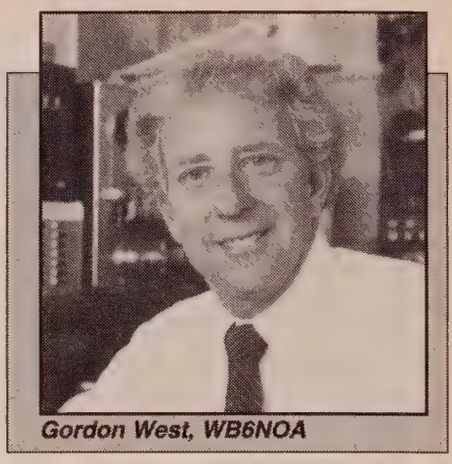
73 for this month, Fred, W5YI ❑



Ron Earl, W6TXK, celebrates with the new hams in his family. R.Scott, KC6WRK, (age seven) and his sister Jeannie, KC6WRI, (age nine) are newly licensed Technican class hams.

Fred Maia, W5YI
National Volunteer Examiner Coordinator
P.O. Box 565101
Dallas, Texas 75356

Code Practice In Class


Gordon West, WB6NOA

CODE FOR THE NO-CODERS?

BY GORDON WEST, WB6NOA

Why not surprise your new no-code class by giving them a little Morse Code? Do not tell the students ahead of time that they might need to learn a bit of code. If they do not think they have to learn the code to pass the class, they will not mind the sounds of CW!

In fact, I suggest you make the 5-wpm code test (Element 1A) an option for any student taking the no-code class *[NARA agrees—Ed.]*. You might teach theory for the first two hours of your three-hour evening session, and then offer an optional one-hour of code for those wishing to obtain the Technician Plus license ("plus" meaning "plus-code"). Those wanting a "code-free" license can leave after two hours, while the others—wanting the Novice or Tech-Plus can stay.

WHAT LETTERS FIRST?

A popular way to teach the code is to start the students on the easy letters. Gradually work them into words, and finally teach them complex letters and numbers. Table 1 shows a suggested progression of letters and numbers which has worked out well for me in classroom instruction, as well as on the Morse Code tapes used by instructors throughout the country:

KEYING METHODS

Use an electronic keyer to form your classroom dits and dahs. This allows your students to hear the code without any accentuated short sounds or long sounds which may be part of your personal CW rhythm. Since we all have our own rhythm when we send with a straight key, let's not make the students learn your particular "fist." Instead, dits and dahs will be formed in the standard manner (see table 2) using an electronic keyer:

CW TONE AND RATE

The most common CW tonal pitch is 777 hertz. This frequency conforms to the specifications used by the FCC for Amateur Radio Morse Code test tapes. In their June 22, 1982, bulletin, the FCC recommends, "The audio frequency used is no lower than 700 hertz and no higher than 1,000 hertz." If you cannot quite figure out what might be around 777 hertz, tune into WWV (10.000 MHz) during the odd minutes and listen for a 600-hertz tone. The tone you want for CW practice is just a little bit higher, so let the National Bureau of Standards time ticks be your guide!

Professional Morse-Code instructors will generate the code characters for the Novice 5-wpm Element 1A examination and the General class 13-wpm Element 1B examination, at a rate of 15– to 18-wpm character rate. This is known as "Farnsworth" instruction. This allows you to teach the letters at a moderate clip, with big spaces between each letter at 5 wpm, or small spaces between each letter at 13 wpm. This way students learning the code for Novice will never need to relearn the character sounds when they progress to General class.

Most Volunteer Examination teams use the traditional Farnsworth rate at 15-wpm character speed for code tests

Table 2

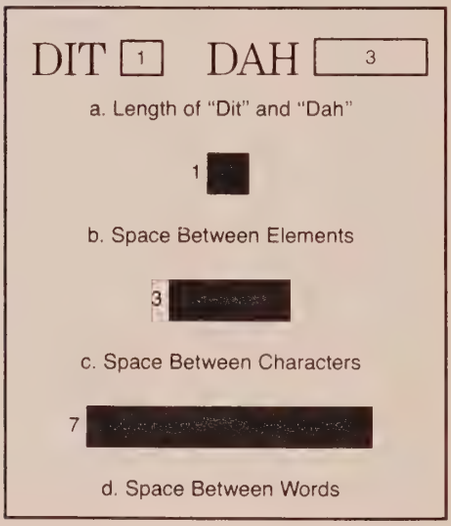


Table 1

Sequence of Lessons on Cassettes

■ Lesson 1	E T M A N I S O SK Period
■ Lesson 2	R U D C 5 Ø AR Question Mark
■ Lesson 3	K P B G W F H BT Comma
■ Lesson 4	Q L Y J X V Z DN 1 2 3 4 6 7 8 9
■ Lesson 5	Random code with narrated answers
■ Lesson 6	A typical novice code test

at 5-wpm Novice class and 13-wpm General class. The American Radio Relay League Volunteer Examinations use a slightly faster character rate of 18 wpm. This "fast Farnsworth" is preferred by some students. But it may cause other students to simply give up in the beginning because it sounds "too fast" to ever learn.

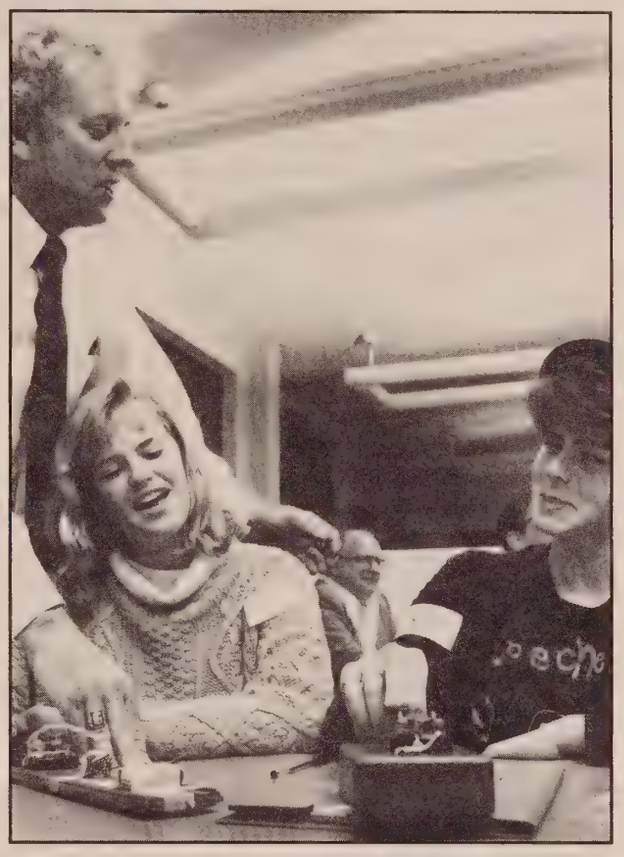
I recommend the more traditional 15-wpm character rate, spaced out to 5 wpm for Novice, or 13 wpm for General class. The more traditional rate does not scare the students, yet it still offers them the Farnsworth code method. This helps eliminate the 10-wpm "plateau" that most students seem to discover when going for General class. But, if an ARRL-accredited VE team will be testing your students, you better key them into the 18-wpm rate so there is no "audio shock" when the code test tape begins.

CODE EQUIPMENT

One of the least-expensive electronic keyers is available from MFJ (P.O. Box 494, Mississippi State, Mississippi 39762; 1-800-647-1800). For under $100, you get a professional paddle set along with a built-in keyer. The speed is adjusted by varying a speed control knob. You can tie this system into an external PA system and teach the amplified code to any number of students. By itself in the classroom, it's not loud enough. You must use a small PA system in order for the sounds to be heard in the back of the room.

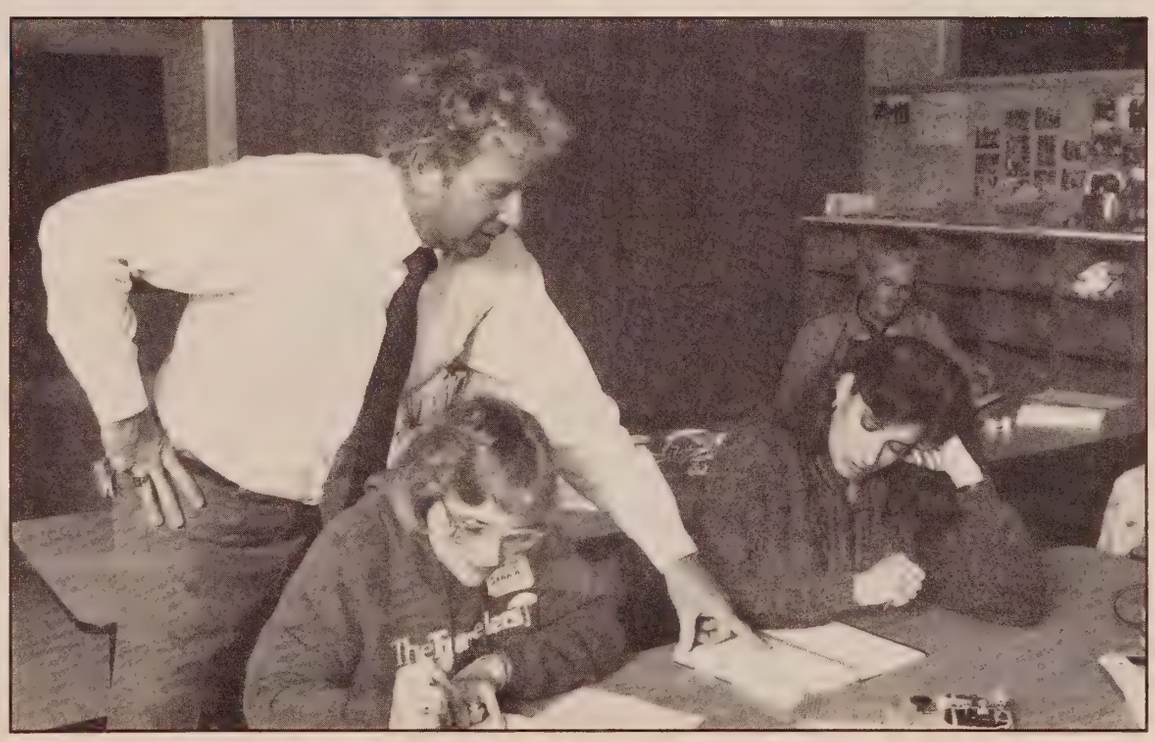
Another good Morse-Code keyer from MFJ is their MFJ-486 Grandmaster memory keyer. It sells for a little under $200 and you will need to supply your own paddles. This keyer is microprocessor-based which allows you to precisely set your character rate, word-speed rate, and the tone. It holds buffers of code practice work you can put together the night before the class meets. The keyer also features random 5-character groups, 1– to 8-character groups, and an infinite number of random QSO's in the same format as most VE-type examinations. It holds up to 8,000 characters of memory, backed up with a lithium battery.

Another fabulous keyer is the "Morse Machine", the ultimate keyer from AEA (P.O. Box 2160, Lynnwood, Washington 98036). The Morse Machine offers 2 to 99 wpm speed selection and over 8,000 characters of



Code keyers for each student makes classroom CW practice fun!

Code for the no-code students—plenty of excitement!



memory in 20 memory slots. If you really do a lot of teaching, you can boost the memory to 36,000 characters by adding an additional chip. The memory is backed up by an internal lithium battery. Once you have loaded your messages, they stay there until you write over them.

I use the Morse Machine in preparing my CW training tapes. It puts out a perfect tone and even offers Dr. QSO. This is a conversation simulator that allows you to actually call CQ and get a response from a "phantom ham station" inside the Morse Machine. It's just like going on the air. Your students will be on the edge of their seats trying to figure out what Dr. QSO is going to send next!

You can interface the Morse Machine through its RS-232 compatible I/O with a lap-top computer to see what is happening, or use the computer as a text generator. I use the Morse Machine in connection with a big IBM/PC system, as well as my portable, Radio Shack Model-100 lap-top computer.

Are you also a computer hobbyist? If you regularly bring an IBM PC-type lap-top to class, consider the ultimate Morse Code instruction program, MORSE TUTOR from GGTE (P.O. Box 3405, Newport Beach, California 92659). This is the program I use for Radio Shack tapes, as well as the program the ARRL uses for the generation of their code training and code testing cassettes. I suggest "Morse Tutor, Advanced Edition—Instructor" which is specifically tailored for "Helping Hams" teaching the code, or VE's giving code tests. The $39.95 advanced instructor edition has specific parameters for those teaching code classes. The $19.95 disk is ideal for students, but doesn't have quite the "instructor needs" that are incorporated in the slightly higher priced disk.

MFJ also produces a $19.95 Morse Code program. One of the lowest cost programs is "Morse Academy," available from NARA for $14.95. There is also an excellent Morse Code program from Renaissance Software. They are all good, but I still feel "Morse Tutor" is one of the best around.

For students learning the code, code key and oscillator sets are available from the *Radio Amateur Callbook* in New Jersey. This allows the students to practice the code together, each sending different letters and phrases in unison. This usually gets some laughs in the class. Any time we can get the students laughing about learning the code, it is a good tension-breaker!

WHAT NOT TO DO

Do not bring in a tape machine and slap on a Gordon West or an ARRL tape and expect the students to stay interested for more than a few minutes. Tapes are fine for at-home study, but do not use tapes in the classroom except for an examination or two. You can be more creative than that!

The same thing applies with the old punched-paper-tape code machines. That is the way I learned the code. But there is a lot that you can do with code learning to make it more fun and personable.

Most of the manufacturers I have listed feature discounts to legitimate instructors. You can buy some equipment direct from the manufacturer, but other equipment must come from the dealer. Work with your local dealer. Let them see the quality of your classroom instruction and the potential for turning out new hams that will ultimately be buying equipment from them. I think you will find that your local dealer will give you terrific support and possibly a nice discount on that Morse-Code practice machine you plan to buy. After all, the more that the dealer supports the "Helping Ham," the more hams that will be coming back to that dealer to buy radio equipment.

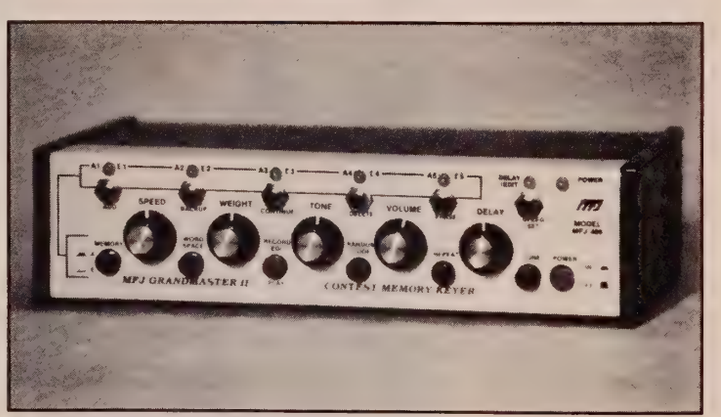
Good luck with Morse Code; if you use the right equipment and techniques, code teaching and learning can be a lot of fun.

73, Gordon, WB6NOA ❑

CQ ALL SCHOOLS ON THE AIR

Every Tuesday and Thursday morning, at approximately 1800 hours UTC, Carole Perry, WB2MGP, and Gordon West, WB6NOA, go on the air with the 10-meter CQ ALL SCHOOLS net at 28.303 MHz. If you are teaching a day class, or teaching in the school systems be sure to tune in. Join Carole and Gordo for a lively classroom-to-classroom contact. Prepare to QSY up the band as soon as you make contact with another classroom on the air.

The Morse Machine from AEA can even carry on a CW QSO with you!



MFJ electronic keyer—great in the classroom with an external P.A. System.

Swappin' & Shoppin'

Looking for Hamfest Flea Market Bargains

BY GEORGE M. EWING, WA8WTE

We've all heard stories of how a friend found some bargain-priced ham gear at a hamfest or computer swap meet. These are temporary, weekend flea markets that are set up for Amateurs and other hobbyists to buy and sell equipment directly. A ham can get on the air with good-quality, used equipment for a lot less than the new price for identical gear. There are pitfalls and things to watch out for, just as in any other kind of consumer shopping. Thorough coverage of the topic could fill a whole book, but I've tried to cover the important principles in this article.

DO YOUR HOMEWORK!

Before you head out to the hamfest, do some research. If, for example, you are looking for a good, used, general-purpose transceiver for the HF bands, read up on the equipment. Read the want ads in magazines like *QST*, *73*, *Nuts and Volts* and *CQ*. If convenient, visit an electronics store that handles used ham gear. Get a good idea of the retail and used price for any given item *before* you go shopping with your hard-earned dollars. Also, find out as much as you can about the technical specs of a rig. Does it include (or even need) a mobile and/or desktop power supply, or will you have to buy or make one? If possible, visit a friend from your local ham club who already has the same model of equipment, and try it out. Find out if there are similar models in the same general price range by the same or competing manufacturers. The more flexible you are in your requirements, the more leverage you will have when it comes to bargaining.

If you have the time and patience, go to a big swap meet. Look around first without buying anything, or at least before making any major purchases. Find out what the asking price for equipment is, and what price the stuff is selling for.

TAKE A FRIEND!

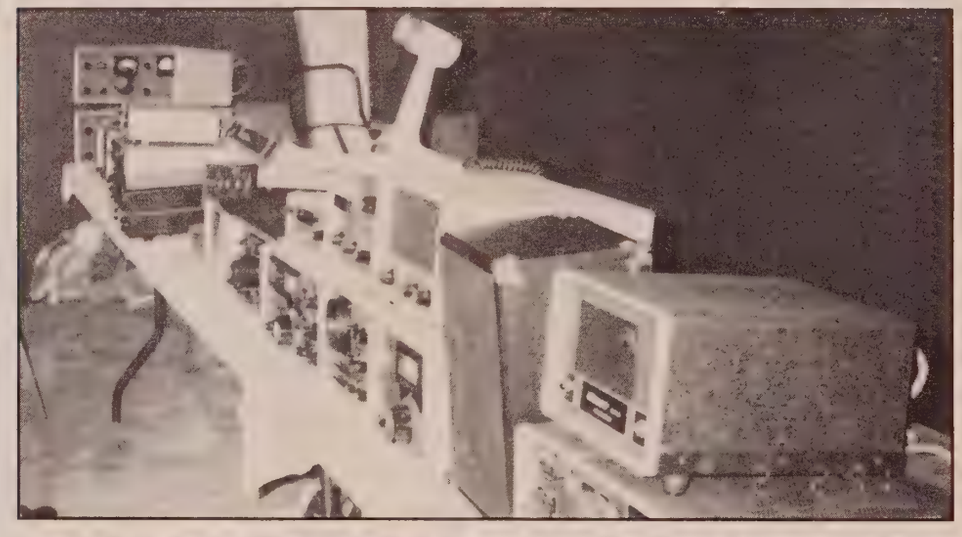
At least for beginners, it's a good idea to take an experienced ham friend along to give a second opinion on equipment. Ideally, it should be some-

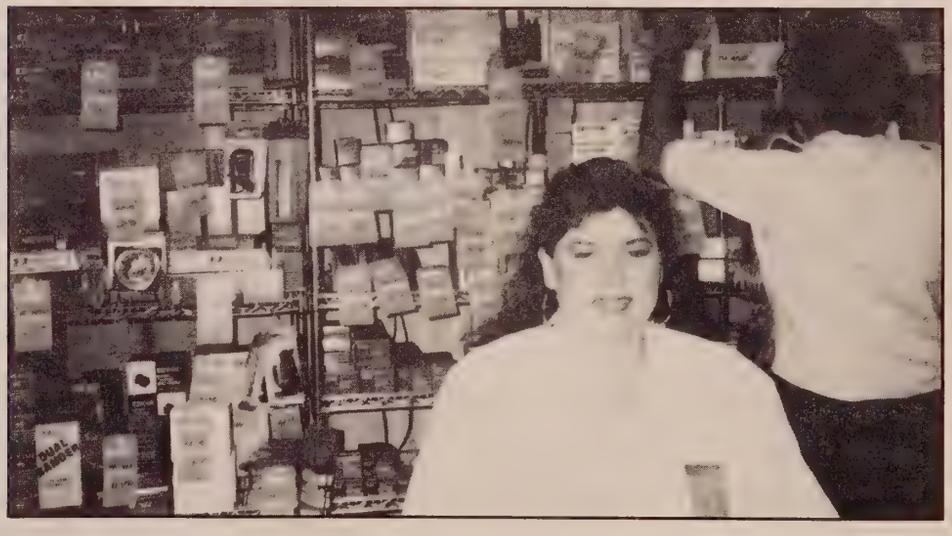
Second hand and surplus gear at the Miami Hamfest.

A display of new and used equipment (top) from a big regional distributor and retail dealer in the Southeast. There are some advantages to buying used gear from a large, established dealer rather than an individual. These may include a much wider selection, and better service and technical support after you buy.

A table full of goodies for sale (center) from an individual ham—just one of hundreds at a typical hamfest swap 'n' shop.

A busy dealer table at Miami. These people are specializing in hand-held HT's, pocket scanners, batteries, and other physically small items (bottom).





one who has experience with that particular piece of gear. Perhaps they even own one and have done some troubleshooting and service on it. Local ham clubs often organize ride-sharing and car pools to out-of-town hamfests. Even having another beginner along can be a big help, if only to carry heavy equipment back to the car. At a big swap meet like Dayton, you may have to walk miles to reach the parking areas.

SHOP THE SMALL STUFF

Everybody would love to buy a fancy transceiver or state-of-the-art, name-brand computer at incredible savings. But do not forget that among the best bargains to be found at a hamfest are smaller items:

Paper—A hamfest is a great place to stock up on handbooks, callbooks, technical manuals, license manuals, and collections of ham magazines with useful construction articles. Shoppers also can find paper and ribbons for teletype machines and computer printers. A fancy, hard-back handbook or callbook (a callbook is a printed directory of names and home addresses of all licensed Amateurs, either U.S. or foreign) that new, retails at twenty or thirty dollars can be purchased for a few dollars if it is a few years old. Most of the information is still useful.

Parts—A hamfest is a great place to buy components for construction projects. Also, spare parts like tubes, crystals, etc. can be found for older, used ham gear. For example, older, crystal-controlled two-meter FM transceivers and handie-talkies that cost several hundred dollars new, are now available for thirty or forty dollars. And this older equipment is in good working condition!

What is the catch? New crystals for these old 5– or 6-channel rigs are very expensive. However, while you are at the swap meet, try to find a ham with a shoebox full of inexpensive, second-hand crystals for sale. For a great price you can get one of these "bricks" on the air with correct channels for a half-dozen of the most popular simplex and repeater frequencies in your area. This assumes you have the skill to install the new crystals in the rig. Or perhaps a friend with a frequency

counter can check out the new rocks and make sure they can be tuned to the exact frequency for each channel in your rig.

Other bargains can be found in coaxial cable, connectors, antenna hardware, blank circuit board, etching chemicals, batteries, etc. It always helps if you have a way to check small parts before you buy. Carry a multimeter for checking diodes, battery cell voltages, etc.

Tools and Test Equipment—Multimeters, frequency counters, SWR bridges, dip meters, small oscilloscopes, and many other assorted tools and test gear can often be purchased cheaply at these hamfests. For the more expensive equipment, make sure you can check it out before buying. If you cannot test the equipment, make sure that the seller will take it back if it does not work as advertised. Above all, make sure it's really something you need! It's no bargain if you can't use it.

Accessories—Microphones, telegraph keys and keyers, paddles, headphones, speakers, connecting cables, and adapters of all kinds are often available inexpensively. However, watch your wallet or purse. Some of these things are nickel-and-dime, but it adds up after a while!

BE A SMART CONSUMER!

Always try to see a piece of equipment demonstrated and working before you buy it. With battery and mobile gear this is usually not a problem. Many swap meets provide AC power to the selling tables, or to a nearby area where equipment can be plugged in and demonstrated to serious buyers. If this is not the case, try to negotiate a reasonable alternative.

If the seller is willing, and has a partner to help watch the table, a quick trip to someplace with power, such as a restroom or concession area is a possibility. Sometimes it helps to carry a good-sized extension cord with you; a seller can often borrow power from another table. If you're *selling* equipment at a hamfest, having power and a partner to watch the table is important!

User's manuals, schematics, factory parts lists, and all the other documentation that comes with a new piece of ham gear is twice as important for second-hand gear. If you already own a piece of surplus or obsolete radio equipment and don't have the manuals, a hamfest is a good place to find them. Carry a handful of business cards or QSL's with your QTH and phone number with you. If you find a seller who has the manual you need but doesn't want to part with it, see if the seller will photocopy it (at least the important pages) for a reasonable fee, and mail them to you later.

Don't be afraid to ask for what you need. I often see hams at swap meets walking the aisles wearing a paper sign pinned to their shirt saying something like: "WANTED: Manual for Heathkit HW-101, HP-13 mobile power supply." It may look a little silly, but it works!

Avoid all the ancient, heavy, surplus gear, especially if you're a beginner. Personally, I'd skip anything with octal tubes or earlier technology. Such gear might include WWII surplus command sets, SCR-series surplus, Hallicrafters S-38's, and the very early VHF gear such as Heath Two'ers and Six'ers, Gonset Communicators (AM two-meter rigs), and most of the GE and Motorola tube-type VHF FM gear, such as the "Progress Line." A possible exception is a better quality, old tube HF receiver if it can be demonstrated to be in good working condition, comes with complete manuals and schematics, spare tubes, etc. and can be purchased under $20-$30.

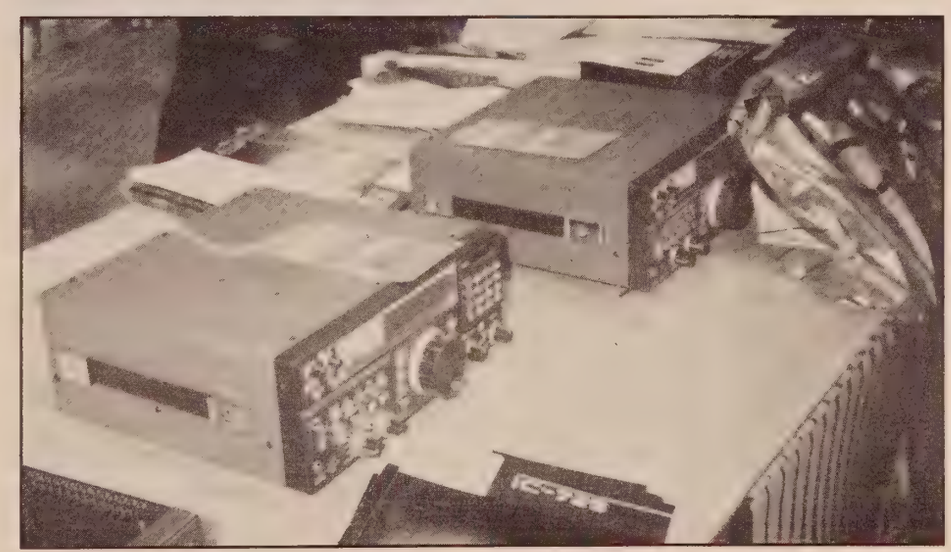
Avoid partially-completed projects, such as half-finished Heathkits and CB to 10-meter conversions that were never actually put on the air. At best, they are a source of spare parts. *Completed*, recent, Heathkit gear, checked out and working, is OK, although the skill of the person who put it together is important. The quality of manuals and documentation for Heath equipment is usually excellent. Try to get a look inside the green box to check on the quality and neatness of solder joints, cable harnesses, etc. Be cautious about the physical condition of batteries, electrolytic capacitors, and older coaxial cable.

Also avoid very early computer equipment, mechanical teletype machines, old tube-type television cameras, etc. A good forty-year-old shortwave receiver may still be useful, but video and computer technology have grown so fast that most really old stuff is worthless.

The vast majority of radio Amateurs and other hobbyists are honest and ethical. But there will occasionally be a bad apple in the best of groups, and once in a while the Ham-Burglar strikes!

Protect yourself with common sense and a little caution. Know who you are dealing with. For bigger purchases, those exceeding a hundred dollars, it is reasonable to insist on a written bill of sale and an exchange of identification, such as a ham license, home address,

(Continued on page 24)



Icom transceivers on sale at a hamfest swap 'n' shop.

Hamwatch

Patti D. Fleetwood, KB6TZF

How to Start One in Your Area

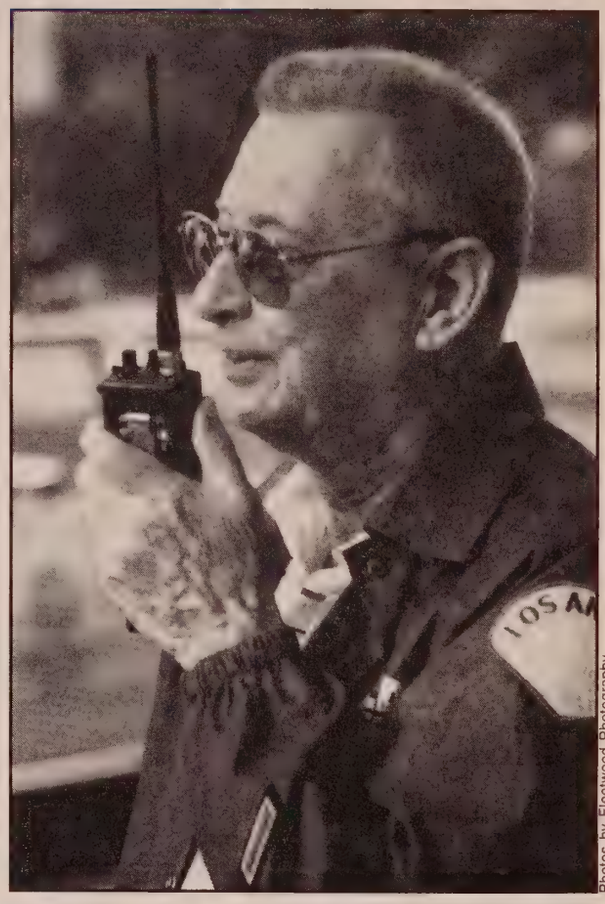
BY PATTI D. FLEETWOOD, KB6TZF

Have you ever felt helpless about the crime in your area? Well, now there is a way you can help your local police department catch criminals by using your Amateur Radio communication skills.

Volunteer Amateur Radio enthusiasts are located throughout California, and various parts of the country, in groups called Hamwatch. Hamwatch members volunteer their time to help their local police departments. Hamwatch does the tedious surveillance work that is not already covered by police personnel. They get none of the glamour or thrill of car chases and arrests; they act only as eyes and ears. Hamwatch members are assigned to high-crime locations and report what they see to the police.

Now one of the most respected community volunteer groups around, Hamwatch is celebrating its tenth anniversary. Hamwatch started in Van Nuys, California, when a group of Amateurs wanted to do something to help the community.

An Amateur Radio Version of Neighborhood Watch



Photos by Fleetwood Photography

Robert Hutchens calls in suspicious character.

THE ORIGINS OF HAMWATCH

According to officer in charge and ham operator, Officer Dave Moye, N6HGA, a local ham group was tired of seeing the crime in their neighborhoods. "Six hams had a regular schedule on 15 meters. They came upon the idea of working with the police department as eyes and ears. They went to the captain and presented the idea."

Hugh Davies, K6TLJ, an original member, explains, "We came up with the idea to go up on roof tops and see what we could do. Well, it worked—we caught someone the first night out!"

Moye says, "There are two ways you can start a Hamwatch in your area. The first is to have hams approach the police department. With officer support, and a strict policy of non-involvement, hams can offer their help as additional eyes and ears in the community. The second way is to have the police department approach hams in the community. This can be accomplished by sending out flyers and going to local Amateur Radio clubs to ask for volunteers."

The only requirements for joining, are that you are at least 18 years of age, in good physical condition, and have a Technician or higher class ham radio license. Hams are recruited and put on probation during their first six times in active watch. The training includes learning police phonetics and the pe-

(Left) Members of Los Angeles area Hamwatch display training manual. From the left are Patti Fleetwood, Officer Dave Moye and Robert Hutchens. In the background is an area map and award received by Los Angeles Mayor Tom Bradley.

(Lower left) Patti Fleetwood relays information to other hams.

nal code, and learning to recognize the factors that would lead to criminal action. The ham recruits are also required to go out on patrol with an existing Hamwatch member. Hams also need to be trained in the important techniques of non-involvement, concealment, observation, and suspect description.

Sergeant Craig Rungaitis, of the Van Nuys Police Department, explains: "We try to have a training day, as often as we can, where we involve them in scenarios of what they might see out there on the street. If they qualify, then that person gets a badge, and the only thing required is that they go out at least once a month."

An average of 7-to 10 Hamwatch members meet twice a week at the police station for roll call before going out on watch. Rungaitis says, "In order for Hamwatch to work, we need a high concentration crime area." So hams enter the previous week's crime reports into the computers to see where they are needed the most. Roll call is taken and the previous week's operations are reviewed. Police radios are issued and stakeout posts are assigned. After discussing the evening ahead, Hamwatch members take their own cars out to the patrol area.

HOW IT WORKS

Members of the Hamwatch group are situated on rooftops, at their assigned posts, with the permission of building managers. Usually, there is an additional member in their own vehicle patrolling the area. Group members are equipped with programmable hand-held radios and police radios. Roll call among the group is done every hour to make sure everybody is OK and that the radios are still working.

John Krauss, W6QMB, a longtime member of Hamwatch, believes that Hamwatch members catch people that are difficult for the police to apprehend. Krauss derives personal satisfaction from the fact that he is helping the police force and the community.

While on stakeouts, Hamwatch often videotapes crimes in action. These serve as audio-visual testimony in court. "These people give up their time to go to court to testify in cases where they've observed the activity," explains Rungaitis. Because of the strong evidence Hamwatch supplies, they have become known as one of the city's most effective citizen crime-fighting organizations. The police department and Hamwatch have received commendations from many law-enforcement officials including the Van Nuys police chief.

Rungaitis is very proud of Hamwatch and says, "I've got some deep feelings about Hamwatch because I was involved with the original idea. I'm very glad that it was accepted as well as it was by the department and the community. The department is pleased to work with these citizens."

It must be stressed that to keep the program legal, hams must run the group and the operations. Also, police personnel may offer their assistance should a crime occur, but they may not treat these operations as their primary duty. If Hamwatch is operated any other way, then there is a good chance that it's not being used in the best interest of the volunteers or the police department.

ACCEPTANCE AND SUPPORT

Both police personnel and volunteers, agree that the support of the department is essential to the program's success. Davies comments, "You need the support of the captain" to make the program work.

Moye suggests, "The department might want to approach the city attorney to obtain a volunteer insurance policy and releases of liability. But, if leaders of your particular department see Hamwatch as a liability, it won't work. hamwatch definitely needs the internal support of the department."

People all over the country have called the Van Nuys Police Department for advice about starting their own program. Currently, there are two existing programs in the San Fernando Valley with more to follow, in addition to programs scattered throughout the country. According to Officer Larry Emard, N6PHV, previously in charge of the Van Nuys group, "Hamwatch can be improved by getting more involvement from other stations as well as the community."

"The sheriff's department has been in touch with us and now they're setting up a Hamwatch program," Rungaitis claims. "We get letters from police departments around the nation requesting information on our program. They have looked at our system and are interested in setting one up."

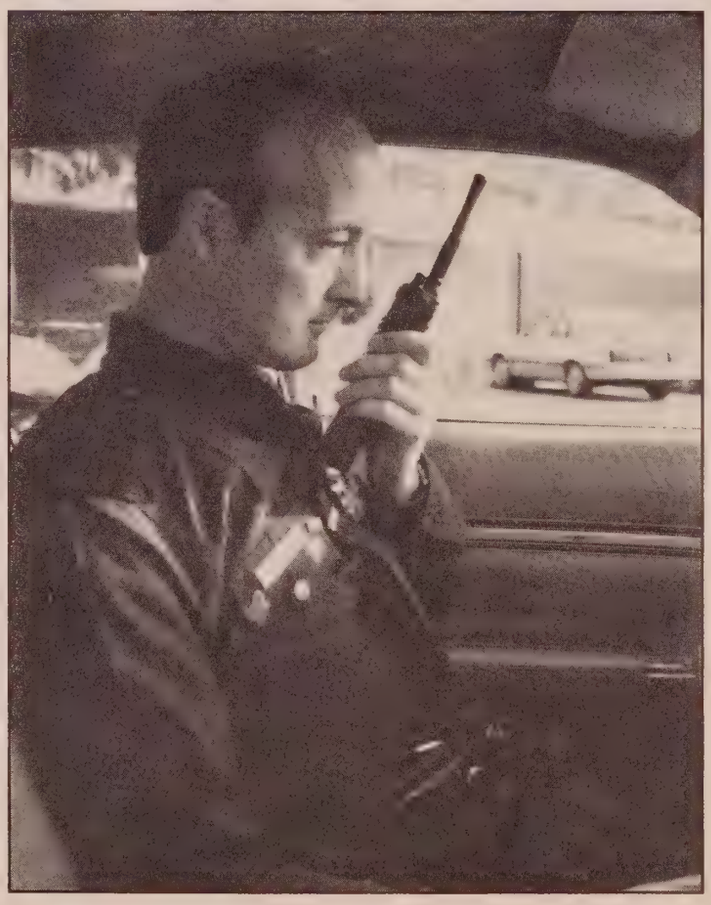
According to Moye, Hamwatch is aimed at getting criminals off the streets and putting them where they belong. "Van Nuys area Hamwatch has donated approximately 6,000 hours per year, working about 100-130 operations, three operations per week for the past 10 years without incident. We have made about 50-to 60 felony arrest per year in addition to the same number of misdemeanors. They have also cleared a substantial number of unsolved crimes off the police department computer system. I have all the admiration in the world for the Hamwatch volunteers. They're coming out and helping their community and the police department. We just don't have the personnel to do the things we'd like to do; that is where they come in."

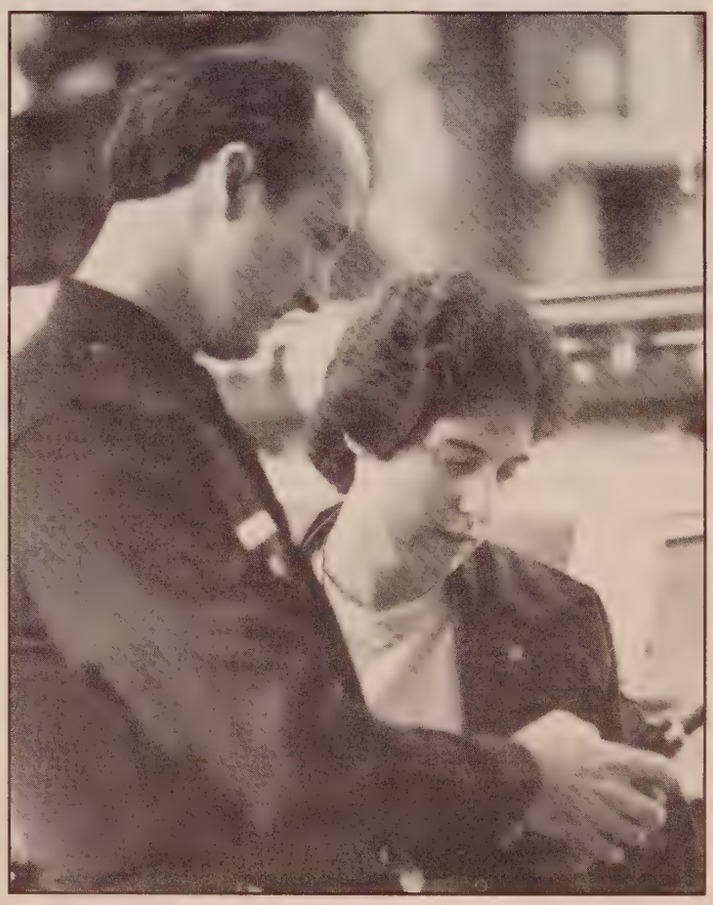
Hamwatch is a group helping to protect the public. As Michael Kahlenberg, KC6ICD, puts it, "Hamwatch is a group, and together it can work, and it has worked. Hamwatch is great and we've done a lot of exciting things. The public might not understand what we do, but we're here to protect our communities to the best of our abilities."

By urging your local police department to start a program of their own, you will not only make good use of your communication skills, but you'll be out there helping the community. If you or your local police department would like help in setting-up your own Hamwatch program, write to the National Amateur Radio Association and the letter will be forwarded to me. ❑

[Editor's note—Be sure that your use of Amateur Radio to assist public safety organizations complies with part 97.113—Prohibited Transmissions—of the Federal Communications Commission Rules and Regulations. Copies of Part 97 are available from NARA.]

Officer Dave Moye (left) relays vehicle information via his hand-held radio. Officer Dave Moye (below) demonstrates how to program a hand-held radio.





GUEST COLUMN

1,000,000 HAMS by 2000

The NARA received the following letter from Tyssen Becker, KB8FJ. It was so well written, and expressed our sentiments so closely, that the Editorial Committee voted to print his entire letter as a guest column.

BY TYSSEN W. BECKER, KB8FJ

I have been a ham for almost 20 years, and am a life member of the ARRL. I have been an active Volunteer Examiner since the beginning and was a VE in the Dayton Amateur Radio Association prototype program in the early 1980's.

Even though I fully support the American Radio Relay League, I recognize that there are some things that can be done which are not being done and many which can be done much better and more efficiently. Constant complaining, whining and "League bashing" will not improve the situation. Perhaps the existence of another strong and responsible Amateur Radio organization will bring about the needed improvement. Hopefully, it will inspire the League to address and correct their deficiencies, as well as provide a new vision toward the Amateur Service and it's future needs. I hope The National Amateur Radio Association will be the impetus behind this vision and will sponsor and support those programs and ideas which will truly benefit all of Amateur Radio, rather than only a small segment or interest.

Amateur Radio has provided almost a century of service and was, in years past, on the leading edge of technology. With few exceptions, every important person in the field of communications was, at one time of their life, a ham. For men like Art Collins and John Kraus, Amateur Radio provided either the interest in electronics or an outlet for their creativity and inspired them to greatness. For some reason, however, in later years Amateur Radio began to drift away from the leading edge of technology and slipped into a sort of nostalgia technology. There were always a few (such as AMSAT) who continued to be at the forefront, but in general, Amateurs seemed to lack that spark of intense, creative enthusiasm. Youngsters weren't interested in ham radio and the engineers in electronics development wouldn't be caught dead with a ham license.

However, I feel this is beginning to change. I see more hams who are enjoying building some of their equipment and experimenting with new methods and modes. I see packet radio sweeping the hobby and a crew of hams flying into space. I see young people beginning to get excited about electronics and radio and having fun too. In the years to come, many of these youngsters will be working in the field of electronics, hopefully pushing the envelope of technology themselves and becoming the future leaders of the electronics industry.

With the proper leadership, ham radio can again be the leader in communications and in all areas of electronics. The NARA can provide some of that leadership. You have several progressive thinking people on the staff who are sincerely interested in attracting youth into ham radio and are actively doing so. Hopefully the membership of both the NARA and the ARRL will also play a role in this leadership and work toward the goal of attracting more of our youth.

How about a goal of 1,000,000 hams by the end of the year 2000? This is only a little over doubling of the current number of hams and we have nine years in which to do it. It won't be easy, but considering the size of the US population base, it is certainly obtainable. Imagine the power and esteem ham radio would have then! Perhaps with those numbers, we could utilize all of our bands to such an extent that no entity would every again consider taking Amateur frequencies away. That is certainly a goal worth working towards. Sheer numbers alone won't solve all of Amateur Radio's problems. Even so, if that isn't the single most important part of the equation, it is an important one and a very good start.❑

Beginner's Luck

Where will that ticket take you?

William F. Blinn, N8POV

BY WILLIAM F. BLINN, N8POV

Jack was feeling pretty good. He had passed the new FCC Technician Amateur Radio test. While waiting for the license to come, he attended a meeting of the local repeater club. Jack was concerned that some hams might not accept him since the new test didn't require learning Morse code.

Most seemed friendly enough, and two hams had invited Jack to see their equipment. One was actively involved in Amateur satellite work and packet communications. The other explained how much he enjoyed RTTY and CW in the HF bands.

To a few hams, Morse code *is* Amateur Radio and vice versa. But most licensees are willing to give new technicians a chance to prove they are good ham "material." The new "codeless" techs are dedicated computer buffs, electrical engineers, and even former CB'ers. They can all add a lot to ham radio.

If you are new to the hobby, take the time before you get your license to listen and learn. Monitor the repeaters in your area and you'll hear traffic nets, swap shops, and emergency service drills. "Listen before you transmit" has a special meaning for new hams. If you learn the proper operating procedures—and then use them starting with your first QSO—you will be welcomed. But if you try to redefine Amateur Radio, you will be shunned.

Use a scanner or buy a transceiver—HT or base/mobile. Just remember you're limited to listening until the license arrives. Scan the two-meter band, or buy a copy of the ARRL's repeater directory. It's a good buy at just six dollars.

CHOOSING YOUR FIRST RIG

The new ham faces a surprising, and frequently confusing, array of choices—what kind of transceiver to buy, what kind of antenna, which bands to work, and what activities to try.

Universal Radio (Reynoldsburg, Ohio) is one of the nation's largest shortwave and Amateur shops. Fred Osterman, N8EKU, the president, says it's best for the new operator to stick with less technical activities. "The new ham typically shouldn't try moonbounce or satellite work," he says. In fact, before you buy anything, you might want to get involved with a local Amateur Radio club. That way you'll find out what's going on in the area and be able to ask other hams about equipment.

At New York City's Barry Electronics, sales representative Jan Bridge, KB2RV, tells new hams to "Ask everyone you can for an opinion. Hams will be glad to give you too many opinions!"

Universal's store manager, Steve Boch, NI8F, says "The greatest interest now is in two-meter phone, followed by 440 and then packet." Bridge says the same is true in the east.

Another choice you will need to make is whether to buy new or used. When hams upgrade, they often trade in their old equipment or sell it at a hamfest. A reputable store should check used equipment before selling it and offer a warranty.

And, says Universal's Osterman, buy a well-known brand. "You don't want to get stuck with an old, used off-brand unit that can't be repaired." Barry Electronics "tries to stay away from used equipment," says Bridge. He cautions new hams to never take more than five dollars to a hamfest or flea market. "If you buy something there," he warns, "make sure you see it in operation and—if you can't—get a written guarantee from the seller."

At Universal you can usually find a good, used single-band HT starting around $150. Plan on spending a minimum of $225 for a used mobile radio. And if you're looking for an all-mode base unit, a used radio will cost at least $350. New equipment, of course, costs more.

YOUR RADIO IS ONLY AS GOOD AS YOUR ANTENNA

You will have to choose an antenna to make your radio work. If you have a mobile unit and plan to use it mainly in the city, a quarter-wave magnetic mount (about $20) will do the job. But if you hope to work the repeater from far away, pick a half-wave or $^5/_8$–wave antenna. "The simplest and easiest antenna for mobile use," says Boch, "is a magnetic mount unit, followed by trunk-mount antennas, and finally by drilling a hole in the car."

New hams who have experience with CB are often surprised by two-

Some stores take used equipment in trade, test and repair it, and then sell it with a guarantee. You won't get the newest equipment this way, but you'll save money if the dealer is reputable. Steve Boch, NI8F, shows some of Universal Radio's used HF stock.

meter's power requirements. CB radios usually put out 5 watts, frequently assisted (illegally) by linear amplifiers. Most VHF (2-meter) hand-held radios have a low-power setting that puts out just half a watt.

IT ISN'T WHAT YOU SAY, IT'S HOW YOU SAY IT

Ham radio is no different from any other hobby in generating jargon. It is the lingo that lets others know you're part of the crowd. Make sure you've mastered the phonetic alphabet. If you identify N8RAK as "Nobody eight Rutabaga Aardvark Kiwi" instead of "November eight Romeo Alpha Kilo," you'll be marked as a lid. "Lid," by the way, is ham-speak for "bozo."

Learn the commonly used Q-codes, too. On two-meter phone, it's just as fast to say, "Yep," or "Affirmative," as it is to say "QSL." But if you drop in an occasional QSL you'll send two messages: the first is the obvious one ("I understand") and the second is subliminal ("I'm part of the group").

Joe Subich, AD8I, the chief engineer for WTTE-TV in Columbus, Ohio, says "members of the `CW forever' group feel threatened and, perhaps, rightly so." He says the future success or failure of Amateur Radio will depend on the new operators. "If they want to play VHF CB, they will. The only power existing licensees have is peer pressure—shunning those who don't operate within the norms of the existing Amateur community."

FOLLOW THE PATH TO HF

As you become more involved, you'll think about upgrading your license. Universal Radio reports a surge in the sale of code practice tapes. People see what they can do with VHF/UHF and decide they want to give HF a try. "That," says Osterman, "was the original intent, I think. We were a little doubtful, but it does seem to be happening."

Bridge says he has not seen that trend in the east, and does not expect to. "The lure of working rare DX countries is not what it once was," he says. This is the age when CNN can broadcast live television via satellite uplink "from a guy with a dish on his back," and from half-way around the earth.

Should you begin studying to upgrade? That is up to you. If the activities you want to participate in are all on six meters and above, why bother? The Amateur satellites are open to you. So is moon-bounce, packet, all the emergency services, RTTY, and even CW, if you want to learn it. Learn CW, pass a five word-per-minute test, and you'll be a Technician Plus—with limited HF privileges. Should the HF bug bite and you want to engage in long-range communications, you'll need (at least for the immediate future) to know CW.

The FCC has doubled the number of entry points to ham radio, from one to two. One includes CW skills and lower technical/theory skills; the other raises the technical gate a bit and eliminates the need to know Morse code. Those who arrive by path 1 (Novice) will undoubtedly go on to learn more theory—and many of those who arrive by path 2 (Tech) will probably learn code.

Dick Barnes, VQ9RB, "from the other side of the world") says he's completely in favor of the new license. "Amateur Radio needs an infusion of new blood. And, perhaps with the pres-

sure off, the code won't be as much of a problem to learn."

If you run into some of the die-hard "you're not a ham unless you know CW" folks, keep Kelley Hughes in mind. Hughes (still awaiting his N5??? license) says he "took the plunge" after 10 years, but chose to take element 1A (code), too. Hughes is very much in favor of the no-code ticket, but says he understands the "I did it, so you should too" mentality. Hughes was a merchant marine officer and had to sit for a five-day license test that included an essay section. After 1976 the test became a multiple choice format and, grins Hughes, "of course those operators were never as good as we were."

Bob Morrow, N7PTM, who's stationed in Montana and known on MARS (Military Affiliated Radio System) frequencies as AFA5EG, says the ability to send faster CW doesn't make you a better operator, just faster. "Remember the days when the TRS-80 computer had a lot of RAM (64K) and a cassette tape for storage?" says Morrow. "If computer types still revered that era like some hams do code, we'd get nowhere."

Don't get drawn into debates between the "CW forever" group and the "no-code nohow" group. CW has a well-deserved place in ham radio, but the argument between extremists in both camps obscures the reasons for Amateur Radio: experimentation, learning, and emergency communications. CW is arguably better able to get through QRM and QRN. That's Vic Rosenthal's, K2VCO, point of view. He says that for DX, "CW provides the most bang for the watt." And, for some, CW is simply fun because it's a skill you can improve with practice. Rosenthal says he has no quarrel with the no-code license. "I'm sure it will add much to ham radio, and I welcome the new hams without reservations."

Phil Usher, KM6AA, offers some of the best advice for the new Amateur operator. "Seek the knowledge of hams and try to find common grounds for discussion." Usher says operators who refuse to accept the new hams should be ignored—as should new hams who operate without regard for anything but their own selfish desires. But everyone's first responsibility is to communicate across the gap.

MacHam

OUTSTANDING TESTING SOFTWARE FOR MAC OWNERS!

Since the introduction of *The Ham Radio Handbook*, Apple Macintosh owners have been asking for testing software that will run on their machines. NARA is pleased to announce the introduction of MacHam, clearly one of the most elegant and useful ham programs ever written for the "Mac." And, it's a perfect companion for *The Ham Radio Handbook*.

Because of the superb Mac graphics, all required circuit diagrams are displayed with the question right on the screen. If the test is printed, the diagrams are included.

The flexibility for training is excellent. The tests can be taken on screen, by element or by chapter, with options of immediate or end-test scoring. Printouts, of interest to VE's, create exact VE style exams, with pool question numbers, correct answer key and blank answer sheets as desired.

One of the most unique aspects is the glossary of needed radio terms that are included online. If you don't understand a word, you simply look it up!

You'll get quite a surprise when the program loads. Not only is there a picture of a rotary beam, the sound plays the "Fifth Symphony" (you know the one where the whole orchestra goes di-di-di-dah).

MacHam is available *directly from NARA* and is priced at $34.95 ($2.00 S&H) by itself or $49.95 ($3.00 S&H) when included in the Education Package rather than IBM software.

CODELESS TECHS—NOT THE BEGINNING OF THE END, BUT THE END OF THE BEGINNING

Jan Bridge at Barry's is happy about the new licensing. As a long-time ham himself, Bridge says "incentive licensing just about killed the hobby." He says the new license class is long overdue. Progressive licensing, he hopes, will create some growth. Losing two megahertz at the bottom of the 220 MHz band, he says, was a "smack in the face." He hopes we'll all get the message: use the frequencies or you'll lose them.

Jack, our fictional ham, has nothing to worry about. By making a conscious effort to be a part of ham radio, he'll be accepted by most operators—whether he ever learns Morse code or not. ❑

HAM BARGAINS

(Continued from page

perhaps a vehicle license number, driver's license number, etc.

Be especially cautious of non-Amateur gear such as CB's, car stereos, video games, and other consumer-type electronic gear. If somebody is selling equipment out of the bed of a pickup truck like cellular phones, car stereos, boom-boxes, and CB's with the snipped wires still dangling, be cautious!

GOOD LUCK!

To recap, it's not too difficult to do some smart shopping at a hamfest. But do your homework, so you know what you want, and about how much it should cost. Shop around patiently, especially at the big hamfests where there may be a lot of competition. No seller wants to lug their heavy or bulky "treasures" back home. Unsold gear may go down in price toward the end of the hamfest. If you are a good bluffer, wait until it is time to pack up, then make the seller a very low offer. Many times it will be accepted. Finally, take an experienced friend along. Check out the gear before you buy, if possible. Use common sense, and know who you're dealing with.

Most of all—good luck!

73, George, WA8WTE ❑

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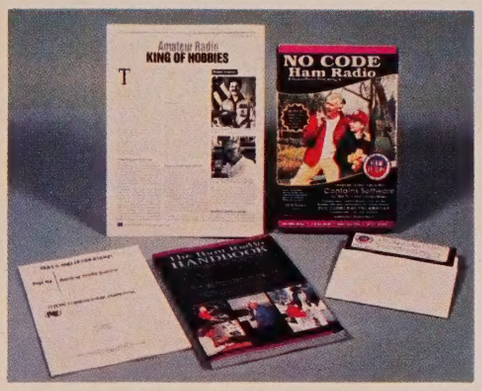
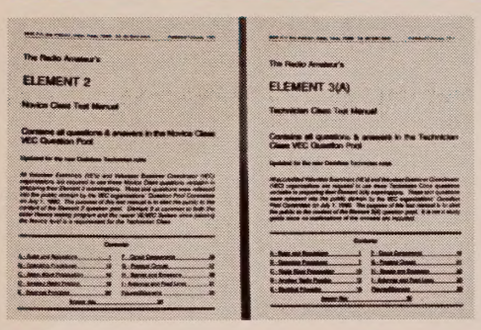


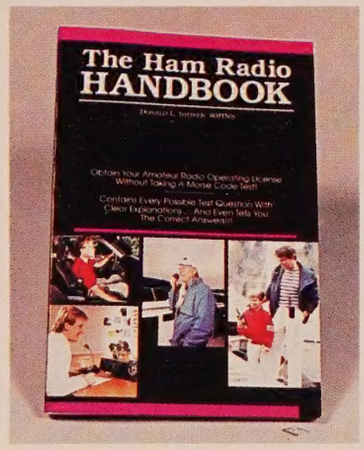
Pass The New Codeless Technician Test!

The **NARA Educational Package** from the National Amateur Radio Association includes: *The Ham Radio Handbook:* 5.25" IBM compatible software for testing your knowledge; a complete list of Contact Volunteer Examiners; the FCC Rules and Regulations for Ham Radio and *Amateur Radio—King of Hobbies*, a publication explaining what Amateur Radio is all about. The **NARA Educational Package** is just $29.95 (3.00 S&H).



The FCC Question Pools

Each booklet contains all the questions and answers for each license class. Does not contain any explanations. Order by license class $3.00 each ($1.00 S&H) or order the Novice and Technician together (all the questions for the new code-free Technician class license) for $4.95 ($1.50 S&H).



The Ham Radio Handbook

The leading book for anyone wishing to earn the new code-free Technician license. Includes every question you might be asked during a test session, plus the four multiple choice answers. *The Ham Radio Handbook* is the only test manual that explains in detail why the correct answer is correct. Includes simple and easy-to-understand theory along with many photos and drawings. The book divides the test questions by subelement, devoting a chapter to each. The appropriate test questions and answers are given at the end of each chapter. The list of correct answers is included at the end of the book. Guaranteed to provide all the information needed to get your ham radio license. *The Ham Radio Handbook* is only $9.95 ($2.00 S&H).

Taking a Ham Radio Test?

This amazing collection includes self-testing programs for *every* license class. Study all 1,931 questions by license class and supplement. The software covers the Novice, Technician, General, Advanced, and Amateur Extra on four separate disks. Each disk includes every possible test question and four multiple-choice answers for each one. You can take sample ham tests right at your IBM compatible keyboard by selecting the correct answer or print out tests just like you will be given during a testing session. Prompts you if the answer is incorrect and tabulates your score both in numbers and percentage correct. This is the definitive work for anyone wanting to go "all the way." The **Ham Operator Package** also includes a copy of Part 97 of the Rules and Regulations, and a copy of *Amateur Radio—King of Hobbies.* The **Ham Operator Package** is only $29.95 ($3.00 S&H).

Having Trouble with Code?

The **Morse Academy** software actually teaches all 43 required code characters and then steps you up through the Amateur Extra 20-wpm level using sophisticated computer aided in-struction techniques. Adjustable tone, standard or Farnsworth spacing. Sends text or random generated characters—even properly constructed code exams. Many features—plus a 40-page on-disk manual! $14.95 ($1.50 S&H).

The Rules of the Road

It took the Federal Communications Commission nearly two years to completely overhaul the Amateur Radio Service Rules to reflect current technology and Amateur operations. The FCC also deleted many unnecessary, obsolete, and redundant rule provisions.

The new rules have now been totally reorganized and revised into Part 97 of Title 47 CFR (Code of Federal Regulations) which covers all rules and regulations governing the Amateur Radio Service. Over 60 pages of information—a must for every Amateur to have in the ham shack. This booklet is priced at $4.95 ($1.00 S&H).

Order Today!

For the fastest service, call NARA at 1-800-GOT-2-HAM (1-800-468-2426)

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NARA publishes the only non-commercial ham magazine that addresses these subjects in a simple-to-understand manner.

What's NARA Doing?

The goals of NARA are to:

- Get more people licensed in the Amateur Service.
- Save the various Amateur bands (frequency ranges) from confiscation by commercial interests.

In the past year, Amateur Radio has lost part of the 220-MHz band and, in some areas of the country, is in the process of *losing access* to another band (900 MHz).

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